

Summary Report

Deactivation and Decommissioning Focus Area Fiscal Year 2001 Mid-Year Review

April 17-18, 2001

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Executive Summary

The Deactivation and Decommissioning Focus Area (DDFA) held its Fiscal Year (FY) 2001 Mid-Year Review Meeting at Florida International University's (FIU) Roz and Cal Kovens Conference Center in Miami, Florida on April 17 and 18, 2001. This year a special Decommissioning Symposium sponsored by the DDFA was held on April 18 and 19, 2001 at the same facility in conjunction with the Mid-Year Review. Based on project presentations made during the Mid-Year Review Meeting, a six-member independent panel reviewed 25 projects currently in the DDFA's portfolio.

Based on the prevalence of similar review comments by multiple reviewers for multiple projects, the following general observations are made concerning the DDFA program and the current projects in its portfolio.

- The DDFA's Large-Scale Demonstration and Deployment Projects (LSDDPs) are addressing the deactivation and decommissioning (D&D) needs of the U.S. Department of Energy (DOE) Weapons Complex by validating the performance of improved and innovative D&D technologies in DOE's projects. The number of new technologies being used within the DOE Complex as a result of the DDFA LSDDP concept is evidence of its success. As of March 31, 2001, LSDDPs have resulted in 93 technologies being demonstrated, 53 first time deployed technologies, and a total of 269 deployments. The current LSDDPs have a high degree of relevancy to the DOE complex end-users' needs and provide good benefits in performance, cost effectiveness and environmental / worker safety & health. The overall project status in terms of cost, schedule, communications, and stakeholder involvement is considered to be reasonable.
- The DDFA sponsored deployments, including Accelerated Site Technology Deployments (ASTDs), are making improved technologies available to the DOE Complex end-users that can be used to more effectively achieve their missions. The deployments have a high degree of relevancy to the end-users' needs and provide good benefits in performance, cost effectiveness, and environmental / worker safety & health. The overall project status in terms of cost, schedule, communications, and stakeholder involvement is reasonable.
- The DDFA sponsored applied research and development (R&D) projects are relevant to the DOE end-users needs and provide benefits in the areas rated, but overall are not quite as effective as the LSDDPs and the deployments. The R&D projects' status was reasonable. For several projects more interaction with the potential end-users of the technology would be beneficial.
- The project presentations at the Mid-Year Review should be improved in the area of the project cost information provided, particularly for the R&D projects. Also, improvements can be made in project schedule information provided in the R&D project presentations.

Table 1 shows the average score for each of the three general criteria categories for each type of DDFA project reviewed at the Mid-Year. Each criteria was rated on a scale from one to five with five being the highest rating. Scores of three or higher indicate that the project is meeting the goals of its end-users. All of the average scores in Table 1 were 3.0 or higher. A summary of scores for each individual criterion for each project is provided in Appendix C.

Table 1 Average Reviewer Scores

Type of project	No. of Projects	Evaluation Criteria		
		Relevancy	Benefits	Project Status
Large-Scale D&D	2	4.0	3.9	3.1
Applied R&D	12	3.5	3.5	3.1
Deployment	11	3.6	3.8	3.0

Introduction

The Deactivation and Decommissioning Focus Area (DDFA) held its Fiscal Year (FY) 2001 Mid-Year Review Meeting at Florida International University's (FIU) Roz and Cal Kovens Conference Center in Miami, Florida on April 17 and 18, 2001.

This year a special Decommissioning Symposium sponsored by the DDFA was held on April 18 and 19, 2001 at the same facility in conjunction with the Mid-Year Review. The symposium highlighted several decommissioning issues such as technology impact, management, and deactivation and decommissioning (D&D) project status. Specific topics included: work force issues, stakeholder and business programs, status and lessons learned, long-term stewardship, environmental safety and health, D&D materials disposition, and the impact of baseline and improved D&D technologies.

The combined event included 232 participants, over 50 presentations and symposium papers, 18 vendor exhibits, and seven technology demonstrations.

There were 25 projects presented and reviewed during the Mid-Year Review Meeting which included: Large-Scale Demonstration and Deployment Projects (LSDDP); Deployment Projects including Accelerated Site Technology Deployments (ASTDs); and Applied Research and Development Projects (R&D). The Applied R&D projects also include representation in the Industry / University Program, the Characterization, Monitoring, and Sensors Technology Program, and the Robotics Program. Additionally, there were 10 project and program presentations given that were not reviewed. A listing of the Mid-Year Review agenda is included as Appendix E.

During the Mid-Year Review Meeting, an independent panel reviewed each project. The purpose of the review was to provide an independent assessment of the relevancy, benefits, and status/progress of projects sponsored by the DDFA. The specific criteria within each of these three areas are listed below in the Review Process section.

Independent Review Panel

The independent review panel consisted of six members representing the United States Department of Energy (U.S. DOE) end-users, the DDFA steering committee, and the commercial utility industry. A seventh review panel member was unable to attend the Mid-Year Review Meeting. The attending panel members were:

Roger Liddle, U.S. DOE-Oakland, DDFA Steering Committee Member
Richard Nevarez, U.S. DOE-Albuquerque, DDFA Steering Committee Member
James Rang, Nuclear industry consultant
Einar Ronningen, Sacramento Municipal Utility District, Rancho Seco Nuclear Generating Station
Drew Spiker, Southern California Edison, San Onofre Nuclear Generating Station
Robert Thomas, Electric Power Research Institute, Decommissioning Program Manager

Review Process

During the presentation of each project, reviewers completed review forms by providing comments and scores for each evaluation criteria. Comments and scores were entered directly onto electronic forms loaded onto computers for each project. Evaluation criteria on the review forms varied depending on the type and maturity of the project being reviewed by the panel.

The ten possible evaluation criteria included are listed below. Collectively, the six criteria with the “Technical Progress” designation are an indication of the project status.

- Relevancy and Technical Approach
- Benefits – Performance
- Benefits – Cost Effectiveness
- Benefits – Environmental & Worker Health and Safety
- Technical Progress – Cost
- Technical Progress – Schedule
- Technical Progress – Communications
- Technical Progress – Stakeholder Involvement
- Technical Progress – End-User Commitment
- Technical Progress – Industry Involvement and Vendor Identification

Each criterion was rated on a scale of 1 to 5 according to the following rating plan:

- 1 – Unacceptable
- 2 – Marginal
- 3 – Acceptable
- 4 – Good
- 5 – Excellent

At the conclusion of the Mid-Year Review Meeting, the electronic forms containing the completed comments and scores were downloaded from the computers. A compilation of comments and scores is included as Appendix D.

Overview of the Program

Mission and Goals The mission of the DDFA is to identify, develop, demonstrate, and assist the deployment of improved technology systems in DOE's D&D projects. DDFA's goals are to reduce the Office of Environmental Management's (EM) D&D costs/mortgages while reducing risks to the workers/public/environment, and accelerating schedules for the deactivation, decontamination, and decommissioning of radiologically-contaminated DOE excess facilities.

To fulfill this mission, the DDFA has established four major goals. These goals are:

- To accelerate technology deployment by deploying at least five first time technologies annually.
- To reduce the cost of the Office of Environmental Management's (EM) major cost centers by reducing the baseline cost for D&D by 40%.
- To address all high priority needs submitted by the Site Technology Coordinating Groups.
- To reduce EM's technological risk by verifying the cost and performance for all full-scale technologies.

Progress and Strategy The DDFA has been successful in providing improved D&D technologies to its customers. The number of technology deployments continues to increase, as information about these improved performance technologies becomes more widely known throughout the DOE complex. As of March 31, 2001, there had been 121 demonstrations, 91 first time deployed technologies, and a total of 336 deployments. Deployment of these technologies has contributed to reducing DOE's decommissioning costs, accelerating D&D schedules, and improving worker safety and health. As an example, deployment of 13 improved D&D technologies demonstrated in the Idaho National Environmental and Engineering Laboratory (INEEL) Fuel Storage Canals and Associated Facilities LSDDP is currently projected to save \$39 million over the next 10 years in INEEL's projects alone.

Additional D&D cost savings to both the DOE Complex and the commercial nuclear industry is anticipated from the activities of the DOE / Utility D&D Consortium established among DOE, the Electric Power Research Institute (EPRI), and several commercial nuclear utilities. A Memorandum of Understanding among the members serves to facilitate the exchange of D&D technology information among the parties and as a vehicle for transfer of technologies used in the government sector to the private sector and vice versa. To date there have been three technologies successfully demonstrated at two different utility sites. EPRI estimates that D&D savings through the DOE / Utility Consortium could be \$1 billion to the DOE and \$100 million for the member utilities.

The DDFA intends to continue implementing its LSDDP model to verify the cost and performance of improved D&D technologies and to provide a pipeline for improved D&D technologies to be deployed by its customers in the DOE complex. Our intent is to have at least one active LSDDP at all times for demonstration and deployment opportunities. Recently, the DDFA has reached agreement to fund two new LSDDPs, one at INEEL and another at Los Alamos National Laboratory (LANL), beginning in FY 2001. Additionally, two more LSDDPs may be funded before the end of FY 2001.

The DDFA continues to support a balanced portfolio of activities ranging from basic science to demonstration to deployment assistance. Strategically, the DDFA is gradually transitioning its investment portfolio from our current near-term emphasis on basic science and technology deployments to technology

development aimed at providing solutions for customer-identified needs after FY 2006. The portion of the DDFA budget dedicated to basic science has increased substantially since FY 1996. Since FY 1996 there have been 23 Environmental Management Science Program (EMSP) projects funded as part of DDFA's portfolio. Several new EMSP D&D projects will likely be funded by the end of FY 2001, which will further expand the basic body of knowledge pertinent to D&D activities. These projects are targeted at fundamental research with the intent that the improved understanding will ultimately result in breakthrough D&D technologies to address post FY 2006 needs.

Key Publications

- Deactivation and Decommissioning Focus Area Annual Report, FY 2000
- DDFA Technical Response to Site Needs, FY 2001
- DDFA Multi-Year Program Plan, FY 2001-2005
- DDFA Annual Performance Plan, FY 2001

DDFA Participation in Major Events (January 2000 –April 2001)

Event	Location	Dates	Involvement
Pollution Prevention Assessment of BGRR Decommissioning Project	Upton, NY	Feb.23,2000	3
Waste Management 2000	Tucson, AZ	Feb.27-Mar. 2, 2000	1, 2, 3, 6
7th Interagency Review Group Meeting NETL/USACE	Baltimore, MD	Mar. 5, 2000	2
EPRI/DOE Workshop - Low Level Rad Waste Management	Sacramento, CA	Mar. 14-15, 2000	2, 5
United States Department of Energy/Electric Power Research Institute Deactivation and Decommissioning Workshop	Rancho Seco, CA	Mar. 20-23, 2000	2,5
DDFA Mid Year Review 2000	Morgantown, WV	Mar. 28-30, 2000	1, 2, 4, 5, 6
International Conference on Nuclear Engineering 2000	Baltimore, MD	Apr. 3-6, 2000	1
Environmental Management Science Program National Workshop	Atlanta, GA	Apr. 24-27, 2000	1,2
Value Engineering Study to Reduce Costs to Decommission MEMP's Old Cave Facility	Miamisburg, OH	Apr. 24-28, 2000	3
National Decommissioning and Deactivation Committee Meeting	Richland, WA	Apr. 25-27, 2000	2
Open House for Demonstration of Large-Bore Pipe Decontamination System at Big Rock Point	Charlevoix, MI	May 22-26, 2000	7

Pollution Prevention Assessment for Test Area North at INEEL	Idaho Falls, ID	June 7-8, 2000	3
Meeting at International Union of Operating Engineers with Environmental Management Advisory Board	Beaver, WV	June 9, 2000	7
International Decommissioning Symposium 2000	Knoxville, TN	June 12-16, 2000	1, 2, 5, 6
EPRI/DOE Workshop - ALARA Worker Safety	Portland, ME	June 13-14, 2000	2, 5
American Nuclear Society Annual Meeting	Milwaukee, WI	June 17-21, 2000	1
Meeting to Evaluate Options for Treating, Storing, and Disposing PCB Contaminated Materials	Ashtabula, OH	June 19-23, 2000	3
Presentation on International D&D Activities in DDFA to NAS	Washington, DC	June 26, 2000	2
EPRI/DOE Workshop/Forum - Decommissioning and Dry Storage	Newport Beach, CA	July 23-26, 2000	2
8th Interagency Review Group Meeting NETL/USACE	Huntington, WV	Aug. 23, 2000	2
Albuquerque Needs Workshop	Santa Fe, NM	Aug. 29-31, 2000	2
Pollution Prevention Assessment of INEEL's INTEC Chemical Processing Plant	Idaho Falls, ID	Sep. 12-13, 2000	3
JCCEM Annual Meeting	Prague, Czech Republic	Sept. 2000	2
Spectrum 2000	Chattanooga, TN	Sept. 24-28, 2000	1, 2, 5, 6
TLG 2000 Decommissioning Conference	Captiva Island, FL	Oct. 9-11, 2000	2
Battelle Columbus Baseline Decommissioning Project Review	Columbus, OH	Oct. 16-20, 2000	3
National Energy Technology Laboratory Industry Partnerships for Environmental Science and Technology Conference	Morgantown, WV	Oct. 17-19, 2000	2, 4, 5
Cost of Occupational Safety and Health Compliance Workshop	Beckley, WV	Oct. 23-25, 2000	2, 3, 5
LTS Workshop at Fernald	Cincinnati, OH	Oct. 25-27, 2000	7
Sixteenth Annual Radioactive Exchange Low Level Radioactive Waste Decision-Makers' Forum and Technical Symposium	Scottsdale, AZ	Oct. 30-Nov. 2, 2000	2
Fernald Needs Workshop	Fernald, OH	Nov. 8-9, 2000	7
IAEA Research Reactor Decommissioning Training Course (Lecturer)	Argonne, IL	Nov. 14, 2000	2

Technical Information Exchange Workshop	Augusta, GA	Nov. 14-16, 2000	2
ASME Peer Review of BOA Asbestos Removal Project	Columbia, MD	Nov. 14-16, 2000	3
Joint Coordinating Committee for Environmental Restoration and Waste Management Meeting - Tritium Decontamination Workshop	Miamisburg, OH	Dec. 11-12, 2000	1, 5
Americas Nuclear Engineering Symposium (ANES)	Miami, FL	Dec. 11-13, 2000	6, 7
Joint Coordinating Committee for Environmental Restoration and Waste Management Meeting - Tritium Decontamination Workshop	Miamisburg, OH	Dec. 13-14, 2000	1, 2
LTS Workshop at San Francisco	San Francisco, CA	Dec. 13-15, 2000	7
Characterization of the Separations Process Research Unit	Denver, CO	Jan. 17 -18, 2001	3
Interstate Technology Regulatory Cooperation Meeting - 2001 Team Leader Training and Team Kickoff Meeting	Baltimore, MD	Feb. 6-9, 2001	3
Waste Management 2001	Tucson, AZ	Feb. 25 - Mar. 1, 2001	2, 3, 6
American Nuclear Society 9th International Topical Meeting on Robotics and Remote Systems	Seattle, WA	Mar. 4-8, 2001	1,2
ANL D&D Training Course (Lecturer)	Las Vegas, NV	Mar. 12-16, 2001	2
Efficient Separations and Processing Crosscut Program Workshop	Atlanta, GA	Mar. 22-23, 2001	3
DDFA Mid Year Review 2001	Miami, FL	Apr. 17-19, 2001	1, 2, 3, 4, 5, 6
A National Forum and Technology Exhibit - Developing Strategies to Accelerate Federal Agency Environmental Cleanup sponsored by the Interstate Technology and Regulatory Cooperation	Salt Lake City, UT	Apr. 23-26, 2001	2
9th Interagency Review Group Meeting NETL/USACE	Sutton, WV	Apr. 24, 2001	2

Involvement: 1 – Chair Session(s), 2 – Presentation(s)/Paper(s), 3 – Panel, 4 – Sponsor, 5 – Major Organizer, 6 – Exhibit Booth, 7 – Attendee

Project Reviews

The remainder of this Summary Report contains a summary of the review comments, average scores for each evaluation criteria, and a response from the DDFA including any actions required by the DDFA for each project. The heading for each project review has a number following its title corresponding to the order in which these projects were presented at the Mid-Year Review and also contains the project Tech ID Number. All of the comments and ratings from each individual reviewer for each project reviewed are contained in Appendix D. An average score of one or two for any criterion may require corrective action from the DDFA.

TRU Waste Characterization, Decontamination and Disposition at Los Alamos National Laboratory LSDDP (5) (Tech ID 2203)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	4.0
Benefits - Performance	3.7
Benefits - Cost Effectiveness	4.0
Benefits - Environmental and Worker Health and Safety	4.0
Technical Progress - Cost	2.7
Technical Progress - Schedule	1.8
Technical Progress - Communications	3.0
Technical Progress - Stakeholder Involvement	3.5

Panel Review Comments. Overall, the relevancy and technical approach of the project was considered good. The project appears to address numerous needs and makes excellent use of commercial technology for DOE specific tasks. There should be extensive D&D applications for most of these technologies within the DOE complex. Technologies with good cost effectiveness for future DOE use were demonstrated, especially for large volume deployments (i.e., air pallets, VACIS, Mega-Tech Blade Cutting Plunger). In addition, the MCS radiography technology appears to be a good selection. One reviewer noted that although the LSDDP focused mainly on TRU retrieved wastes, that there was no indication that the initiatives have been integrated into actual D&D projects. It would be more relevant if the scope was focused to address gloveboxes coming out of the facility during deactivation to avoid the costs of crating, transportation, etc. One reviewer was not clear on how the project controlled dust during saw operation in a radiologically controlled area.

This area has little commercial utility D&D relevance. Some benefit might exist from work on improved air filtration systems. Would like to see more information on the BPC-4 and the Evolution 180 Saw for steel. These might have potential applications for commercial D&D sites including a possible demonstration or deployment opportunity at utility sites.

Overall, costs appear to be under budget except the administrative costs, which are over budget. Concerns were raised over the project being behind schedule. It appeared the list of potential demonstrations was unrealistic and, in fact, several were removed from the list. It was also noted that most of the potential FY 2001 demonstrations planned were listed as being on “hold” or “planned for next year”. There was no discussion on how to get back on schedule, only that a request for an extension was being submitted.

DDFA Response. The DDFA agrees that the LANL LSDDP addresses numerous needs related to decommissioning of plutonium-contaminated gloveboxes and other TRU-contaminated materials and equipment. Currently, the scope of the project is limited to excavated crates at LANL containing TRU-contaminated metals. Much of the demonstrations have focused on characterization of intact crates to determine the contents of the crates and location of components within the crates to plan for their opening. The VACIS technology will be used to image all of the currently retrieved crates.

The DDFA agrees that excellent commercially available technologies have been demonstrated in the LANL LSDDP including MCS radiography. Regarding the control of dust during sawing, the speaker failed to mention that several of the saws being considered for crate opening include dust collection equipment. In addition, the Nuclear Air Prefilter will address the dust control problem.

Although this project has little relevance to utility sector D&D, some of the technologies with broad applications may be useful there including BPC-4 and air pallets. The IC Team can provide the utility sector with more information on the BPC-4 and Evolution 180 Saw, as data and reports become available. The IC Team on the LANL LSDDP is continuing to seek possible demonstration of improved air filtration systems.

Costs are under budget due to an unplanned JCCEM workshop with Russian colleagues on plutonium glovebox decontamination in December 2001. This has caused a two-month delay in selecting technologies and starting demonstrations. The administrative costs are over budget due to the JCCEM workshop. The project is behind schedule due to delays caused by the unplanned JCCEM workshop and delays in implementing the baseline technology, DVRS, through the ASTD program. This will necessitate delaying relevant demonstrations (e.g., decontamination) until FY2002 so that improved D&D technologies can be demonstrated alongside the competing baseline technologies comprising the DVRS. Five demonstrations are planned for FY2002.

Mound Tritium Facilities LSDDP (6) (Tech ID 2201)

Criterion	Average Rating
Relevancy and Technical Approach	4.0
Benefits - Performance	4.0
Benefits - Cost Effectiveness	4.0
Benefits - Environmental and Worker Health and Safety	4.0
Technical Progress - Cost	3.3
Technical Progress - Schedule	3.5
Technical Progress - Communications	3.5
Technical Progress - Stakeholder Involvement	3.3

Panel Review Comments. The approach and relevancy of this project are good. Overall, the reviewers found the project was very successful in demonstrating technologies for the clean up of tritium facilities. The project has demonstrated many different technologies, which can be used to stabilize tritium facilities. In many cases, evaluation of the cost effectiveness of a demonstrated technology versus the baseline could not be made because cost effectiveness information was not presented for all technologies demonstrated. One reviewer noted, however, that many of the technologies tested should be very cost

effective. Most of the demonstrated technologies, if successful, will provide enhanced worker and environmental protection.

Several organizations have been involved in the demonstrations conducted by this project, which should help in the application of these technologies at other sites with tritium problems. The project is keeping ahead of the Mound site needs. DOE stakeholders were identified and stakeholder involvement appears to be on target. Schedule performance information was not presented against baseline information. No project cost information was provided for FY 2001; hence, cost performance could not be adequately assessed. There were no utility D&D needs in the technologies demonstrated.

DDFA Response. The DDFA agrees, in general, with the reviewers' comments. ITSRs were not complete for many of the demonstrated technologies, resulting in insufficient cost effectiveness data in those cases. DDFA has recognized this problem for some time and is working towards resolving it. Currently, DDFA is not conducting any more demonstrations until the ITR backlog is eliminated. DDFA also agrees with the reviewer's comments about the deficiency of cost and schedule information for FY 2001 in the presentation. The project is a little behind in cost and schedule and may continue with carryover funding for no more than one quarter in FY 2002 to complete all the documentation necessary to close-out the project.

Beryllium Surface and Air Monitors (9) (Tech ID 2914)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	4.2
Benefits - Performance	4.2
Benefits - Cost Effectiveness	3.0
Benefits - Environmental and Worker Health and Safety	4.8
Technical Progress - Cost	3.4
Technical Progress - Schedule	3.5
Technical Progress - Communications	3.0
Technical Progress - Stakeholder Involvement	3.8
Technical Progress - Industry Involvement and Vendor Identification	3.7

Panel Review Comments. This is a well thought through and managed project that will lower worker exposures to beryllium within the DOE complex, if successful. Calibration is clearly superior to baseline techniques. Ability for deconvolution is clearly an advantage. However, the performance of the instrument concept for beryllium measurement still must be demonstrated. One reviewer thought the project was too complex for field use with concerns about the cooling/cleaning apparatus. The instrument still does not provide immediate beryllium exposure information, as the instrument measurement update rate takes up to five minutes, but it does significantly reduce the two-week baseline time.

The application is relevant only to D&D at DOE sites as designed. Airborne and surface beryllium are not utility D&D concerns and no commercial industry applications are known. However, similarities exist in the monitoring of lead and hexavalent chrome during active thermal cutting of materials (coated surfaces with lead-based coatings, cutting of stainless for hexavalent chrome). Depending on the costs, it could be beneficial over baseline (sending samples to lab) for air monitoring during cutting if adaptable to the mentioned hazards. It would need to be relatively inexpensive to employ at a utility. The technology may be better suited as a provided service, where the contractor provides the capital investment.

The project is on budget. Instrument design is about two months behind schedule and the reviewer suspects the manufacturing schedule will also slide. The schedule seems fine for DOE. The project is teaming with Rocky Flats personnel. There is broad stakeholder involvement (e.g., several potential end-users and other DOE groups). Obtaining additional commitment should not be a problem if the technology works.

DDFA Response. DDFA agrees with the overall positive assessment of the technology's potential. A demonstration of the instrument concept for beryllium measurements will be demonstrated in mid-June 2001 in lab-scale testing including another competing technology also under development. The technology is complex, but was unavoidable in addressing various end-user needs and the plethora of DOE site regulations and procedures (e.g., IH protocols). The contractor is investigating improving measurement update rates (approximately one minute with lower confidence to sound an early alarm condition). As noted, the present design of five-minute update rates is a vast improvement over the two-week baseline.

Beryllium measurement capability is relevant to industry where beryllium is used (e.g., Speedring and Brush-Wellman plants throughout country). In addition, LIBS technology is applicable to many (if not virtually all) RCRA metals. Therefore, the technology has a wide-range of potential applications, which could offset its relatively high estimated cost. The developer, SEA, has a history of providing high-technology instrumentation and diagnostic systems (e.g., Pipe Explorer) as a service rather than as purchased equipment, if that approach is better suited to the end-user.

As noted, the instrument design is about 2 months behind schedule working to an accelerated schedule that was requested by Rocky Flats. The project is teaming with many entities. This includes: Lovelace Respiratory Research Institute for subcontractor testing support; Rocky Flats personnel for end-user input; DOE-EH for consistency among applicable DOE sites (such as LANL, Y-12, and Pantex); NIOSH for current studies on beryllium health affects; OSHA to keep abreast of potential future rule-making; and DOE Beryllium Working Group to tie communications between all of these groups together. The Pantex Plant is currently pursuing a direct contract with SEA to procure a second prototype with their own site funds for use in their beryllium-contaminated facilities.

Characterization Engineering Initiative (10)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.7
Benefits - Performance	3.5
Benefits - Cost Effectiveness	3.7
Benefits - Environmental and Worker Health and Safety	2.0
Technical Progress - Cost	1.0
Technical Progress - Schedule	2.0
Technical Progress - Communications	3.6
Technical Progress - Stakeholder Involvement	2.7
Technical Progress - End-user Commitment	2.0
Technical Progress - Industry Involvement and Vendor Identification	4.0

Panel Review Comments. Overall, the project goal of obtaining regulatory approval of specific real-time characterization technologies / instrumentation for use in performing regulatory required

characterization activities was considered highly relevant and extremely important. This project takes advantage of previous work by attempting to extend the usefulness of existing technologies. Its importance extends to both the DOE complex and the commercial utilities. Good screening of currently available characterization technologies was done. However, actually pursuing the regulatory approval of more technologies is needed for better cost effectiveness. Worker health and safety can be improved by extending these characterization technologies to these new applications.

For maximum benefit, it is important to work with as many of the applicable regulatory agencies as possible (e.g., NRC, EPA, state agencies) and gain the acceptance of all the regulators for a given site. There were questions concerning the mechanisms by which the regulators would be engaged in this process and the importance of concurrence from the NRC in particular. In addition, some reviewers sought additional information on the process, more discussion/indication of stakeholder involvement, and specifics on the benefits to DOE. One reviewer noted the project cost was not provided and that the schedule was optimistic since a DOE site had not yet been selected.

DDFA Response. DDFA agrees that the project is highly relevant to DOE needs and greatly expands the application of the real-time field characterization technologies for regulatory purposes. DDFA also agrees on the potential to improve worker health and safety. Use of real-time characterization instruments in the field versus sample collection would reduce worker (i.e., sample collectors and lab technicians) exposure. The project will include at least one demonstration for regulatory acceptance.

Most of the interaction with regulatory agencies will be through the ITRC. If the NRC is not part of the ITRC team, then Florida International University (FIU) plans to include a NRC member on the project since some "DOE" sites are under NRC jurisdiction. Also, FIU is engaging the regulators and the expectations are that the selected DOE site will involve public stakeholders through groups like Site Specific Advisory Boards. FIU anticipates conducting a demonstration at a DOE site in FY 2001 assuming that they can work with the ITRC on choosing an instrument and a scope for a demonstration.

The benefits presented were major cost and schedule savings by allowing use of field instrumentation versus having to send samples to an analytical lab and await their results. No specific cost and schedule savings were cited, since this will be part of the demonstration. The project cost is only \$100K and the money did not become available until March 2001. Many more technologies can be demonstrated for regulatory acceptance, if we can show success on the first one or two. Several companies have already expressed an interest in getting their instruments involved with their support. DOE sites have already inquired how they can work with us to help them get approval. The project has started slowly, but has potential for rapid acceleration based upon some initial success.

Modular Manipulator for Robotic Applications (11) (Tech ID 2199)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.3
Benefits - Performance	4.0
Benefits - Cost Effectiveness	3.7
Benefits - Environmental and Worker Health and Safety	3.8
Technical Progress - Cost	2.3
Technical Progress - Schedule	2.8

Technical Progress - Communications	2.0
Technical Progress - Stakeholder Involvement	2.0
Technical Progress - End-user Commitment	2.7
Technical Progress - Industry Involvement and Vendor Identification	4.0

Panel Review Comments. The project technical approach was very good, using a flexible design that could be developed for several identified needs, and appears to have good potential. Several reviewers noted that no end user was identified, however, and questioned this apparent lack of up front customer identification. Glovebox automation is an issue within the DOE complex, but with little relevance for utility D&D. Improved robotic capabilities and reduced costs may increase the limited robotic use in utility D&D. This technology should be better than the baseline. Given the non-repetitive DOE applications, it is questionable any cost savings will occur. ES&H benefits will probably be greater. Currently on schedule, but has slipped by six months, and no glove box test will be performed. No cost information was provided.

DDFA Response. Agree that the project technology has good potential. A proof of concept and demonstration effort was originally planned at Sandia National Laboratory (SNL). Mid-way through this project, the demonstration plan was cancelled due to the unavailability of several key personnel at SNL, who were to be responsible for this joint testing effort. Beyond the scope of this project, several additional demonstration opportunities are being pursued. This demonstrates a strong end user interest for a product that has not had its initial testing completed. DOE has an unquestionable need for robotics which industry cannot satisfy. This robotic system is a technology development, not an application development. A project goal is to produce a toolbox that allows developing and deploying these unique robotic systems for less cost than building them from scratch. This project was extended, in part, to accommodate the delays resulting from the loss of a specific deployment site and the search for a suitable alternative.

Robot Task Space Analyzer (12) (Tech ID 2171)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	2.8
Benefits - Performance	3.2
Benefits - Cost Effectiveness	2.7
Benefits - Environmental and Worker Health and Safety	3.3
Technical Progress - Cost	2.0
Technical Progress - Schedule	2.3
Technical Progress - Communications	3.5
Technical Progress - Stakeholder Involvement	3.5
Technical Progress - End-user Commitment	3.0
Technical Progress - Industry Involvement and Vendor Identification	3.7

Panel Review Comments. The project is relevant to areas with high radioactive contamination. Addresses DOE needs using innovative technologies to make remote robotic operations more efficient and, therefore, more desirable. It may yield significant benefits in the long term far superior to the baseline, but will require tailoring to meet specific needs. The inherent inefficiencies in remote operations are prohibitive for most utility operations. Full-scale test and evaluation not completed yet and have no operator feedback, but based on preliminary information it looks promising. Noted the demonstration used a very simple depiction of processing pipes. The reviewers also questioned the operator skill level

required, whether specific software must be written for each new application, whether the equipment's positioning accuracy is sufficient, and a lack of specific cost and schedule data being presented.

DDFA Response. DDFA agrees that both the primary applicability and the great potential are in areas with high radioactive contamination with significant advances over the baseline possible. Also, agree that over time these research advancements must be tailored to specific needs to promote successful applications of the technology. The task mock up is believed to be adequate for testing sensor performance and the general concept. Later full-scale work will be fully representative. Operator skill levels required will in general be reduced making D&D activities less dependent on unique skills and training. This telerobotic system does not require unique software for each application. Software considerations for tooling differences would be developed as part of the system capabilities and delivered to a project. Worst case positioning accuracy is estimated between ½” and 1”(due to cumulative errors associated with the pointing accuracy of the sensor head), which is sufficient for most dismantlement activities. Precision tasks will require addition localized sensing. Larger scale integrated testing results from ORNL are needed to address cost effectiveness.

Telerobotic Control (13) and Telerobotic Manipulation System (14) (Tech ID 2939, 2181)

Criterion	Average Rating	
	13	14
Relevancy and Technical Approach	3.0	2.7
Benefits - Performance	3.3	3.0
Benefits - Cost Effectiveness	3.7	3.0
Benefits - Environmental and Worker Health and Safety	3.0	3.0
Technical Progress - Cost	3.3	3.0
Technical Progress – Schedule	3.3	3.0
Technical Progress - Communications	3.3	3.0
Technical Progress - Stakeholder Involvement	3.3	NR
Technical Progress - End-user Commitment	3.3	2.5
Technical Progress - Industry Involvement and Vendor Identification	3.5	3.0

Note: Projects 13 and 14 are closely aligned and were presented at the same time. Most of the specific review panel comments were directed towards both projects.

Panel Review Comments. The project technical approach seems reasonable, but it is too early for appropriate feedback. The project has long term focus and applicability by addressing needs for accomplishing tasks that are more difficult in the future. It has the potential to yield significant benefits. Tailoring specific parts of this project to meet needs that are more specific will be required to achieve these benefits. However, this technology could be out of date in five years. A clear end point has not been defined. The high equipment cost seems to limit its deployment to highly radioactive environments or into Hanford Tanks. It is too early to determine whether this technology will be an enhancement over non-traditional methods (i.e., teleoperated systems) that have not yet been used. The technology reduces the operator skill level required. No apparent ES&H improvements over manually operated telerobotics.

DDFA Response. DDFA agrees that there are potential significant benefits from this project. This is a

long term development effort to integrate research results from other DDFA funded activities. This project does not establish a definite end point to this long-term integration process. It targets more difficult tasks (e.g., in highly radioactive contamination areas) where cost is a secondary issue. However, productivity and efficiency increases from telerobotic control would lower the cost of deploying robotic technologies and widen their potential applications. Use for additional applications over current teleoperated systems would remove more workers from hazardous environments.

Upgrading teleoperated systems, which are only now being established as a replacement for manual systems, is the goal. The initial integration of telerobotic control into field demonstrations / deployments is scheduled for FY 2003. The initial deployment for this technology has been identified as insertion of telerobotic control into a system under development by the Tanks Focus Area. Efforts will continue in FY 2001 to secure a field demonstration / deployment opportunity at either Hanford or INEEL within the D&D operations at those sites. Reducing the required operator skill level for robotic operations is a major goal of this research. The potential for the technologies becoming “out of date” in a few years is recognized. However, technology upgrade in the field is typically slow, therefore, these systems will still likely provide useful upgrades over installed systems for several years.

High Productivity Vacuum Blasting System (15) (Tech ID 2224)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	4.0
Benefits - Performance	4.3
Benefits - Cost Effectiveness	4.0
Benefits - Environmental and Worker Health and Safety	3.4
Technical Progress - Cost	2.7
Technical Progress - Schedule	3.0
Technical Progress - Communications	3.0

Panel Review Comments. The reviewers generally consider the project’s relevancy & technical approach, performance, and cost effectiveness good, although specific comments were quite varied. Material decontamination using blasting technologies is seen as potentially beneficial with a high degree of relevance to D&D work. The technical approach is considered sound and addresses a considerable needs base. Both reduced secondary waste and the ability to clean “just the right amount” due to incorporating real-time radiation sensing during cleaning were seen as cost saving features. On the other hand, two reviewers had concerns about blasting particles escaping due to the “non-perfect” condition of surfaces being decontaminated based on past experiences with grit blast systems. Additionally, a reviewer thought attempting to control a blast-head in operation for a simultaneous free release survey would be difficult and provides too great a possibility of error in radiation surveying. Other comments ranged from the measured improvement in cleaning rate being only modest (36% to 52%) and not suited for large decontamination efforts to another reviewer seeing the potential for significant improvements over baselines. Additional comments included uncertainty on whether dust particle collection was any better and that no end user had been identified.

The ES&H benefits were generally considered satisfactory. One reviewer viewed this technology, if successful, as far superior to using tents with their related airborne issues. Again, another reviewer was concerned about dust particle “blow-by” on non-smooth surfaces. The technical progress in cost,

schedule and communications were generally considered satisfactory although there were comments concerning insufficient information being provided in these areas during the presentation.

DDFA Response. The DDFA agrees that the project’s technical approach is technically sound and that this technology, if successful, can benefit D&D activities in both the DOE complex and the utility industry. The blasting head’s “lift off” sensors are designed to stop the blasting process if the blast head leaves the work surface. This includes instances when irregularities in the work surface are encountered. This should address the concerns with “blow-by” that were expressed by some reviewers based on past experiences with other systems. The results presented were achieved using a prototype design. The final commercial design will incorporate further improvements, which should increase operation efficiency and make the technology more cost effective. The current design incorporates a vacuum system that improves worker safety significantly over baseline technologies (e.g., the use of tents).

AEA Technologies (Multiple Tasks) (16)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.0
Benefits - Performance	4.0
Benefits - Cost Effectiveness	4.0
Benefits - Environmental and Worker Health and Safety	4.0
Technical Progress - Cost	2.0
Technical Progress - Schedule	3.0
Technical Progress - Communications	3.0
Technical Progress - Stakeholder Involvement	3.0

Panel Review Comments. AEA Technology appears to have a good understanding of the problems facing the application of the technologies. The projects appear to be a mix of individual tasks with good scope and impacts. Each task seems to be appropriate to its respective need and on track to meet the end user requirements. The decontamination effectiveness appears to be limited for utility applications. However, sponge blasting may benefit the isolated cases of lead decontamination and the retention basin project could have some aspect of applicability for characterization of concrete, especially when chasing cracks where contamination entered large, complex concrete structures. The presenter did not provide adequate baseline and cost information.

DDFA Response. The DDFA acknowledges the positives comments on the technical scope, performance and benefits to the DOE nuclear complex. The DDFA will work to make sure that the proper cost and baseline information is provided in the next mid-year presentation.

Technology Development, Integration and Deployment Program (18)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.7
Benefits - Performance	3.7
Benefits - Cost Effectiveness	3.5
Benefits - Environmental and Worker Health and Safety	3.5
Technical Progress - Cost	2.0

Technical Progress - Schedule	3.4
Technical Progress - Communications	3.5
Technical Progress - Stakeholder Involvement	5.0
Technical Progress - End-user Commitment	3.3
Technical Progress - Industry Involvement and Vendor Identification	3.0

Panel Review Comments. The project provides a good interface with commercial D&D efforts. This is a showcase for the cooperation between DOE/Florida International University and the commercial D&D sector. Project objectives were well developed and sufficiently flexible to change scope (i.e., pipe decontamination system, crate size reduction, improved cutting technology). FIU-HCET seems to be working on areas that match needs and is making real-time improvements to these areas. The technologies being developed are good, but prioritizing technology development/deployment should be done with end user input. Suggest using the DDFA User Steering Committee to assist in this effort. No project cost data was provided.

DDFA Response. DDFA agrees with the positive comments concerning the project. FIU-HCET has targeted its technology development efforts according to the DDFA's needs statements. In the future, DDFA plans to include potential end-users through the DDFA User Steering Committee in prioritizing the needs for technology development.

Worker Health & Safety Research & Technology Development (19)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.7
Benefits - Performance	3.8
Benefits - Cost Effectiveness	3.0
Benefits - Environmental and Worker Health and Safety	5.0
Technical Progress - Cost	2.0
Technical Progress - Schedule	3.4
Technical Progress - Communications	4.3
Technical Progress - Stakeholder Involvement	3.6
Technical Progress - End-user Commitment	3.0
Technical Progress - Industry Involvement and Vendor Identification	3.0

Panel Review Comments. The project has a moderate degree of relevance for commercial D&D activities. Cutting of stainless steels is problematic and better ventilation/filtration would be beneficial. This project will improve measuring techniques for inhalation exposure to aerosols. A very worthwhile look into personnel safety issues. The approach reflects a reasonable use of actual metals and cutting techniques. However, it is not clear how the results of this study will relate to ALARA principles. Project cost data was not provided.

DDFA Response. The intent of project is to provide a better understanding of aerosol behavior to enable better worker dose estimates and to provide for the design of more effective ventilation/filtration systems. The project will provide base data to allow for minimum effective PPE packages. This will allow workers to complete tasks in radiation areas faster and more effectively to reduce total dose.

D&D Waste Disposition & Treatment (20)

Criterion	Average Rating
Relevancy and Technical Approach	4.0
Benefits - Performance	5.0
Technical Progress - Cost	2.5
Technical Progress - Schedule	3.3
Technical Progress - Communications	4.0
Technical Progress - Industry Involvement and Vendor Identification	2.0

Panel Review Comments. The project has fairly high relevance to commercial D&D activities. A cost effective treatment process would benefit older plants where PCBs in paints has been a major issue in some cases. The process could be applied beyond the nuclear type D&D sector; however, few industries perform the characterization necessary to identify the hazard. Mixed wastes and hazardous wastes are problematic for commercial sites and tend to be difficult to handle and expensive to address. While our industry recognizes the benefits of recycling materials, and it makes good common sense, the political ramifications can shut down an otherwise technically viable process. The goal of simply treating the waste stream successfully is sufficient to justify the program. It was also noted that this project could assist the SNL environmental restoration project. They currently have a PCB waste that is contaminated with tritium and are still looking for a disposition path for this waste.

Other comments included the following. Overall, the project seems to be in the lab R&D phase. It has wide potential applicability, but is difficult to grade pending more real world testing. One reviewer thought the project should be funded under the Mixed Waste Focus Area (MWFA). Another reviewer questioned how the project got to this point with no host site identified, especially considering the existence of other specific site identified needs.

DDFA Response. DDFA agrees with the project comments that reflect the D&D problematic issues associated with tri-regulated waste streams at nuclear power plants. Baseline technologies for these waste streams are almost non-existent. The project activities were developed to address these unique wastes. Project comments reflected an indication of the benefits from recycling and stressed that treatment alone justifies the program. Benefits afforded aging nuclear power plants were identified for those plants now planning or undergoing D&D activities. Concern that not all industries characterize waste to the extent power plants do was listed as a potential limitation of the market identification. Cost considerations relative to “available disposal methods” were listed; if disposal methods were available, such considerations would have merit. Several DOE facilities, as well as nuclear power facilities, have identified such waste streams that have a need for technology development. Additionally, the comments reflect a need for this type of technology at SNL.

Addressing the comment interpreting the project as being in the lab R&D stage, the presentation provided verbal indication of receipt of a pilot unit. Real world testing is in the planning stage, but has not yet been accomplished. Regarding the funding of this project by DDFA versus by the MWFA, the project funding was developed based on the generation of the subject waste streams from D&D activities. Project comments also reflected a concern about not having an identified host demonstration site. The original development was to treat waste generated from the large bore pipe decontamination system at a nuclear power plant undergoing D&D activities. Similar waste streams have been identified at several DOE

facilities. Identifying a host DOE site for demonstration remains a key challenge. Baseline cannot be assumed to be disposal or there would be no need for the technology. Disposal regulations do not encompass all waste of this type without some treatment.

Long-Term Monitoring & Stewardship for DDFA (21)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.4
Benefits - Performance	3.0
Technical Progress - Cost	1.0
Technical Progress - Schedule	3.3
Technical Progress - Communications	3.0

Panel Review Comments. This project appears to be on track to address the needs in the long-term monitoring and stewardship area. Needs in this research area are largely state by state / project specific dependent. Integration of these efforts should be done with the LTS working group. For the commercial utility sector, the outcome of this research should be tied with the NRC's investigation into entombment for utility facilities. This type of project, if successful, may provide a viable alternative to shallow land burial for LLW at decommissioning utility sites. One reviewer noted that this project does not lend itself to review against most of the evaluation criteria. No data was provided to evaluate the “technical progress – cost” criterion.

DDFA Response. DDFA agrees with the comments of the review panel. Efforts will be made to work more closely with LTS groups, particularly those at INEEL and DOE Headquarters.

D&D Technology Assessment Program (22)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.6
Benefits - Performance	3.5
Benefits - Cost Effectiveness	3.5
Benefits - Environmental and Worker Health and Safety	3.5
Technical Progress - Cost	2.7
Technical Progress - Schedule	3.5
Technical Progress - Communications	4.0
Technical Progress - Stakeholder Involvement	3.7
Technical Progress - End-user Commitment	3.0
Technical Progress - Industry Involvement and Vendor Identification	4.0

Panel Review Comments. This is a broad scope R&D project primarily involving technology assessments. The scope of the assessments seems reasonable. With 83 technology assessments completed and 12 more scheduled, the project accomplishments appear good. The project provides a good reference for end-users, but incorporating specific field experiences would broaden the value by aiding end-users in matching this information to their specific needs.

One reviewer was not sure of the value-added from this project. That reviewer noted that there is a built in assessment program at DOE for technologies tested within the complex. The reviewer was not sure how these assessments specifically benefited a potential end-user of the technology. Also, the reviewer was unclear on whether FIU provided this service to other organizations deploying technologies or with the deployment of FIU developed technologies. In addition, no comparison with baseline was provided for rating purposes.

DDFA Response. One of the challenges of doing D&D at DOE sites is having the right kinds of cost, safety, and performance information to be able to compare baseline and innovative technologies. FIU-HCET's D&D Technology Assessment Program (TAP) has established a partnership with DOE end-users and other interested parties to help provide this information. After assessing the needs of the end-users, identifying technology vendors, and executing technology assessments, the information is made available to all interested parties electronically, and in monthly and year-end reports. This information is used to help make decisions regarding technology deployments at DOE sites, either directly, or through programs such as the LSDDP and ASTD. The technology assessments done by the TAP are carried out in a non-radiological environment, but include many of the constraints that would be encountered in contaminated DOE facilities (e.g., use of actual DOE equipment, mobility barriers, and PPE). The TAP's activities are intended as third party, objective assessments of technology performance. Over time, the TAP has engaged DOE end-users for input in the definition of problem sets, and the design and planning of useful assessments. As the TAP moves forward, it strives to carry out ever more comprehensive and relevant assessments, and in its evaluation of innovative technologies of special interest to end-users, to highlight their inherent and potentially unique capabilities.

FIU-HCET is investigating the possibility of doing some of its assessments in the field at DOE sites (e.g., ORR and RFETS). Such assessments will include more realism and practical detail than is currently available from evaluations carried out at FIU-HCET facilities in Miami.

ARI Technologies Asbestos Destruction (28) (Tech ID 3114)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.8
Benefits - Performance	4.3
Benefits - Cost Effectiveness	3.0
Benefits - Environmental and Worker Health and Safety	5.0
Technical Progress - Cost	2.8
Technical Progress - Schedule	3.5
Technical Progress - Communications	3.0
Technical Progress - Stakeholder Involvement	3.0

Panel Review Comments. The technology appears to have significant potential to address some of the concerns with asbestos containing material (ACM). Considering the stage of development the technology appears to have considerable promise to reduce the cost of radioactively contaminated asbestos and improve worker safety and performance issues.

DDFA Response. Because environmental regulations are ever changing, there is a need to address the performance and cost of destroying ACM through thermal destruction. This technology destroys the ACM so that it becomes a benign mineral and can be recycled as construction material. The intent of the

12-month project is to thermally treat 10,000 lbs. of ACM and to gather the appropriate cost and performance information. A cost analysis conducted by the United States Air Force indicated that ARI's thermochemical conversion process is comparable to other treatment technologies such as dechlorination, solvent extraction, soil washing and vitrification. The project is a firm fixed price contract. The project is on cost and slightly behind schedule because of delays in the ACM reaching ARI's site.

Deployment of Innovative Characterization Technologies and Implementation of MARSSIM Process at Radiologically Contaminated Sites ASTD (29) (Tech ID 2374)

Criterion	Average Rating
Relevancy and Technical Approach	4.8
Benefits - Performance	4.8
Benefits - Cost Effectiveness	4.5
Benefits - Environmental and Worker Health and Safety	4.0
Technical Progress - Cost	4.0
Technical Progress - Schedule	3.8
Technical Progress - Communications	3.8
Technical Progress - Stakeholder Involvement	4.0

Panel Review Comments. In general, the reviewers provided high marks for BNL's two ASTD projects, Deployment of In Situ Characterization Techniques and Implementation of the MARSSIM Process at the BGRR; and Smart 3D Subsurface Contaminant Characterization at the BGRR. The overall average score was 4.2.

The reviewers felt that the project goals and technical approach were reasonable and clearly established. One reviewer wondered whether structures could be left behind, presumably based on regulatory/stakeholder concerns. Another suggested sharing project documents (e.g., Quality Assurance Program Plan) would benefit others doing similar MARSSIM surveys and characterization. The excellent correlation of in-situ characterization data with conventional baseline techniques was noted.

Technical performance and cost-effectiveness were highly rated. One reviewer questioned why the number of samples taken for in-situ characterization differed from the baseline approach. Considering the continued and multiple applications of this approach at sites throughout the DOE complex, one reviewer cited the attractiveness from a cost perspective, but questioned its cost-effectiveness for application at a single commercial utility. Another reviewer considered this approach as one that could lead to potential significant cost savings.

Improved worker health and safety was recognized and one reviewer specifically cited the benefit of reduced entries into radiologically controlled areas.

Communication of technical progress and stakeholder involvement was well rated – one reviewer stated that excellent use of graphics would make it easier for regulators and stakeholders to understand the issues. This is one of the goals of the ASTD project.

DDFA Response. The reviewers did not distinguish their comments for each project, so in some cases, it is not clear to which activity the comment applies.

The issue of leaving structures in place is, in fact, a controversial issue and one where little precedent can guide BNL. However, BNL is taking a rational, risk-based approach to determine feasibility before making recommendations. The objectives of the FY 2001 ASTD project will address this issue in particular. Results from characterization will be used to help determine a safe, cost-effective course of action with regard to below-grade structures.

In regards to the sharing of documents, all project documents including the QAPP have been compiled and are available for distribution.

In regards to the number of samples for the baseline approach and MARSSIM, the MARSSIM process emphasizes Data Quality Objectives and specifically tailors the number of samples to the characterization need and the method used to gather the data. In this sense, ISOCS and baseline characterization are apples and oranges (i.e., a single ISOCS characterization is comparable to multiple baseline measurements).

It may be true that the approach used in the ASTD projects may not be cost-effective if it is deployed on a first-time and single-use basis at a particular utility. However, commercial companies deploying this technology, who already own the equipment and have experienced personnel, can be contracted to conduct the work in a cost-effective manner.

Size Reduction of the JN-3 Reactor Bioshield using Diamond Wire Saw ASTD(30) (Tech ID 3086)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.6
Benefits - Performance	4.0
Benefits - Cost Effectiveness	3.8
Benefits - Environmental and Worker Health and Safety	4.0
Technical Progress - Cost	3.2
Technical Progress - Schedule	3.2
Technical Progress - Communications	3.0
Technical Progress - Stakeholder Involvement	3.0

Panel Review Comments. The need for cutting concrete is prevalent in DOE and the utility sector. Diamond wire saw is a baseline technology for cutting large concrete objects and it is effective. It was demonstrated to be cost-effective and reduced cost.

The use of large amounts of water for cooling the wire can be an issue for some applications. There are systems to reduce the amount of water used for cooling (e.g., misting systems). Water recycling was innovative.

Cross-contamination can be a concern.

Project cost was not provided and the schedule did not show the milestones.

DDFA Response. This deployment of the diamond wire saw technology was specific to radioactive work where many of the support systems, such as water processing and containment, did not exist. The

techniques and approaches used, including water recycle, water spray control, temporary enclosures, and radioactive area wire rebuilding, minimized the cost of generating expensive engineered systems where none were available. Although this project was only dealing with surface contamination and irradiation levels of 100,000 dpm/100 cm² or less and maximum gamma levels of 40 mR/hr, it demonstrated that CEMP's site-specific capabilities could use this approach for hot cell removal. The real cost savings will be in using this approach for future work (i.e., incorporating this approach into CEMP's baseline).

Water control and containment in the diamond wire sawing process are key to radiological success, both from a personnel exposure standpoint and the control of airborne and surface contamination. Secondary waste was also minimized by confining saw cutting operation and utilizing its "remote" capabilities. The bioshield was cut from the least to the most radiological condition so that continuous improvements could be made in these areas. Water control was achieved in a variety of ways. The sump area was located in a confined area of the reactor pool. The minimum amount of water needed for cooling was established for wire cutting purposes and for dust control. The water spray was contained within enclosures while the workers were placed back from the spray. Slowing the saw speed down also controlled the required amount of water spray. This slowed the cutting process but significantly improved the radiological control. A "most efficient" speed was established. By plugging the starter holes and initial cuts with caulk shortly after the start of a block cut, the water (and water spray) could be directed into the confined sump area.

We also provided radiological control through containment including the use of enclosures, HEPA filtration of enclosures and the area, establishment of radiological areas and step-off pads, and continuous radiological monitoring, both from an airborne and cross-contamination standpoint. However, the water control measures provided most of the radiological control, which minimized secondary waste from these support systems. The controlled water usage, in lieu of nitrogen cooling and airborne control, concentrated the radioactive particles into sludge, which is a much smaller volume of waste to get rid of than bulkier air filters. Three full-time support personnel were required to separate the sludge from the water, to package the sludge for disposal, and to recycle the water.

Project has been completed and final report was delivered in May, 2001. Project cost was \$390,000 and project started on October 1, 1999.

Reducing, Reusing, and Recycling concrete and Segmenting Plate Steel and Tanks Utilizing a Universal Demolition Processor ASTD (31) (Tech ID 2981)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	4.3
Benefits - Performance	4.0
Benefits - Cost Effectiveness	4.3
Benefits - Environmental and Worker Health and Safety	3.5
Technical Progress - Cost	3.5
Technical Progress - Schedule	3.5
Technical Progress - Communications	3.5
Technical Progress - Stakeholder Involvement	3.5

Panel Review Comments. The technical approach was well planned. Goals were clearly established and constraints were identified for the selection of equipment. Cost, schedule, communications and stakeholder involvement for the project were satisfactory. One reviewer made a comment that the

Japanese have done a lot of work with recycling contaminated (low-level) concrete. It might be useful to review their work presented last year at the NEI/EPRI Decommissioning Technology Forum in Newport Beach, CA.

DDFA Response. The DDFA agrees with the reviewers' comments. DDFA will investigate the Japanese work done in this area and will consider implementing any lessons learned that may be applicable to D&D activities in the DOE complex.

Improved Measurement and Monitoring Systems (IMMS) ASTD (32) (Tech ID 2983, 2984, 2985)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.0
Benefits - Performance	3.5
Benefits - Cost Effectiveness	3.5
Benefits - Environmental and Worker Health and Safety	3.0
Technical Progress - Cost	2.5
Technical Progress - Schedule	2.0
Technical Progress - Communications	3.0
Technical Progress - Stakeholder Involvement	3.0

Panel Review Comments. The reviewers found the project results to be satisfactory. The remote radio communications for air monitoring was considered an excellent idea. However, one reviewer commented that the need for a remote prismless survey instrument was probably not a high D&D priority in comparison to other needs. The reviewers noted the project was behind schedule.

DDFA Response. DDFA generally agrees with the reviewers' comments. The survey instrument was included in this project for a specific need at Fernald (i.e., capping verification of the Fernald On-Site Disposal Facility in the summer of 2001). Additional DOE uses of this technology may occur, if this project successfully demonstrates advantages over competing technologies. The project is behind schedule due to a late start in FY 2001 resulting from funding issues. DDFA expects the project to make-up for this start-up delay as the project progresses.

Intrusive and Non-Intrusive Characterization through Concrete Walls ASTD (33) (Tech ID 2982)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	2.5
Benefits - Performance	3.0
Benefits - Cost Effectiveness	3.0
Benefits - Environmental and Worker Health and Safety	3.0
Technical Progress - Cost	1.0
Technical Progress - Schedule	1.5
Technical Progress - Communications	3.0
Technical Progress - Stakeholder Involvement	3.0

Panel Review Comments. The reviewers generally found the project's technical approach and benefits satisfactory. Some reviewers expressed concerns about cost and schedule. This included identifying some key activities, but not identifying specific goals and objectives for FY 2001 and FY2002. It also included \$620,000 of FY 2001 and FY 2002 funding remaining (from an original \$820,000 for the project) with no specific cost plan presented. A recommendation was made to establish specific milestones and scope definition for the remaining project funds.

DDFA Response. DDFA agrees with the reviewers' comments. This project is unlike most other projects. First, there is no baseline approach for dealing with the "old cave". Second, the main objective of the project is to provide technical assistance to achieve improvements over the baseline methodology and provide superior technological solutions for any need that may arise. Until the baseline project can establish a clear path forward, this project cannot proceed forward with deployment of innovative technologies. Once a final baseline plan is in place, DDFA will move quickly to implement the reviewers' recommendation to establish a schedule and milestones.

Highly Selective Nuclide Removal System ASTD (34) (Tech ID 2937)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.8
Benefits - Performance	4.8
Benefits - Cost Effectiveness	5.0
Benefits - Environmental and Worker Health and Safety	4.5
Technical Progress - Cost	3.7
Technical Progress - Schedule	3.3
Technical Progress - Communications	3.0
Technical Progress - Stakeholder Involvement	3.0

Panel Review Comments. This project appears successful for the DOE DDFA especially in removing cesium-137 (Cs-137) from groundwater. The SRS just started strontium-90 (Sr-90) removal with ion-exchange. No schedule for Sr-90 removal was provided. The technology has the additional benefit of schedule acceleration, which is almost as valuable as the cost savings. It also has potential as an alternative to conventional solidification techniques. The technology will satisfy the needs at several other DOE facilities. It also addresses the concerns with primary (spent fuel pool) water at utility sites and at the stated treatment cost per gallon, looks attractive. However, the issue of secondary waste could be a showstopper for utilities.

DDFA Response. Both systems (3M and Selion) successfully removed Cs-137 at 98% to 99% removal efficiency without any breakthrough of the membrane of Cs-137 through the 3M membrane cartridge and Selion resin bed, respectively. Secondary waste volume generated in the 3M system is much less than with the Selion system. At SRS, the Selion system is presently engaged in removing Sr-90 from the groundwater in the presence of calcium, and is scheduled to complete Sr-90 removal by the end of August 2001. 3M is further developing the cartridge to remove Sr-90 from groundwater in the presence of calcium. This development is ready for demonstration at any available site.

The 3M technology (selective separation cartridge) is more suitable for high flow rates and low nuclide concentration without any channeling effect. The Selion technology is highly selective and more suitable for high nuclide concentration. Both technologies require 1 to 2 micron prefiltration and both have the

benefit of accelerating the planned schedules for remedial applications at the sites. They both provide high decontamination factors of the targeted nuclides, with a low volume of secondary radiological waste contributing to an overall reduction in disposal expenses. In addition, both technologies have significant cost benefits compared to the baseline cost, and wide applications for deployment at the DOE sites and private nuclear industry.

Rocky Flats D&D Initiative – Central Size Reduction Facility and ASTD Projects (35) (Tech ID 2918, 2987, 2916, 2986, 2988)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	4.0
Benefits - Performance	4.0
Benefits - Environmental and Worker Health and Safety	3.0
Technical Progress - Cost	2.0
Technical Progress - Schedule	2.5
Technical Progress - Communications	2.0

Panel Review Comments. Numerous technologies were discussed during the presentation. In general, the Rocky Flats Environment Technology Site (RFETS) has achieved progress to date and continual improvement is being made on in-use methods and techniques. The worker health and safety issues were adequately addressed. The presentation did not present an optimistic view of meeting the overall project completion schedule of 2006. Need to provide baseline information on performance and cost for the ongoing projects. There are some common utility interests such as size reduction, decontamination, cutting techniques, and worker safety improvements.

DDFA Response. The Deactivation and Decommissioning Focus Area (DDFA) is actively pursuing technologies that safely accelerate the cleanup activities at RFETS. The DDFA manages the demonstration and deployment of several improved characterization, decontamination, and remote size reduction technologies. These include replacement of outdated characterization equipment with state-of-the-art characterization technologies, a remote-operated in-situ size reduction technology to segment gloveboxes, and an interbuilding transportation system to safely move plutonium gloveboxes between buildings. Additionally, several chemical-based and mechanical-based decontamination technologies, and a beryllium air and surface monitor are being developed. Most of the technology schedules are driven by the RFETS completion date of December 2006. RFETS has made tremendous progress in reporting project costs over the last year because of a change in the performance based integrating management contract. The contract now allows funding from EM-50 in addition to the negotiated cost baseline. Information on the performance of some of the cutting technologies of utility interest can be found in the Rocky Flats deployment factsheets.

TRU Waste Laser Cutting System ASTD (36)

<u>Criterion</u>	<u>Average Rating</u>
Relevancy and Technical Approach	3.5
Benefits - Performance	3.0
Benefits - Cost Effectiveness	1.0
Benefits - Environmental and Worker Health and Safety	4.0
Technical Progress - Cost	3.0

Technical Progress - Schedule	3.3
Technical Progress - Communications	3.3
Technical Progress - Stakeholder Involvement	3.0

Panel Review Comments. The reviewers found the project to be satisfactory except for the cost effectiveness of the technology (specifically in the context of use by commercial utilities). They also considered it an innovative technology and noted the technical approach of making the technology transportable for deployment at multiple sites. In addition, they noted significant benefits in reducing safety and health risks to workers.

DDFA Response. DDFA generally agrees with the reviewers' comments. This technology cannot compete with most thermal cutting technologies for cost. However, it has a niche application in high radiation environments where risks to workers practically prevent performing any decommissioning activities. These are the targeted applications for this technology.

Robotic Platform for B-Cell Cleanout (37) (Tech ID 2919)

Criterion	Average Rating
Relevancy and Technical Approach	3.0
Benefits - Performance	3.0
Benefits - Cost Effectiveness	3.0
Benefits - Environmental and Worker Health and Safety	3.0
Technical Progress - Cost	2.5
Technical Progress - Schedule	2.5
Technical Progress - Communications	4.0
Technical Progress - Stakeholder Involvement	4.0

Panel Review Comments. The technology satisfies many Hanford needs, but seems to have limited direct application at other DOE sites. It is still too early in the deployment process to judge the technical approach. The robotic work platform technology allows remote operating tool access to all areas of the 324 building hot cells. The performance, cost, and ES&H benefits are secondary to the special needs of inaccessible areas and the site/building. These results are pending completion of deployment. The project is on budget and slightly behind schedule. The technology is specific to DOE's D&D needs and is probably not transferable to utility D&D. One reviewer felt that the cost will likely exceed the planned funded cost.

DDFA Response. The technology does satisfy many Hanford needs and its D&D capabilities will have application at other DOE sites with highly contaminated areas that are inaccessible. It is still early in the deployment process, as the tooling was just received in the Spring of 2001. The plan is to begin deployment in August 2001 after training is done. There is no apparent reason why the technology cannot also be applied to a utility D&D setting. The project is on budget and the project team has not indicated that it will run over budget.

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Appendix A

List of Acronyms

ACM	Asbestos Containing Materials
ANL	Argonne National Laboratory
ASME	American Society of Mechanical Engineers
ASTD	Accelerated Site Technology Deployment
BGRR	Brookhaven Graphite Research Reactor
BNL	Brookhaven National Laboratory
BWXT	Babcock and Wilcox
CEMP	Columbus Environmental Management Program
D&D	Deactivation and Decommissioning
DDFA	Deactivation and Decommissioning Focus Area
DOE	U.S. Department of Energy
DOE-EH	U.S. Department of Energy Office of Environmental Safety and Health
DVRS	Decontamination and Volume Reduction System
EERC	Energy and Environmental Research Center
EML	Environmental Measurements Laboratory
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
ES&H	Environmental Safety and Health
FDF	Fluor Daniel Fernald, Inc.
FEMP	Fernald Environmental Management Project
FIU	Florida International University
FIU-HCET	Florida International University Hemispheric Center for Environmental Technology
FY	Fiscal Year
IC	Integrated Contracting
ICT	Integrated Contracting Team
IDS	International Decommissioning Symposium
IH	Industrial Hygiene
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
ISOCs	In Situ Object Counting System
ITRC	Interstate Technology and Regulatory Cooperation
ITSR	Innovative Technology Summary Report
JCCEM	Joint Coordinating Committee for Environmental Restoration and Waste Management
JCCRM	Joint Coordinating Committee for Radioactive and Mixed Waste Management
LANL	Los Alamos National Laboratory
LIBS	Laser-Induced Breakdown Spectroscopy
LLW	Low Level Waste
LSDDP	Large-Scale Demonstration and Deployment Project
LTS	Long Term Stewardship
MARRSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MEMP	Mound Environmental Management Project
MOU	Memorandum of Understanding
NAS	National Academy of Sciences

NEI/EPRI	Nuclear Energy Institute/Electric Power Research Institute
NETL	National Energy Technology Laboratory
NIOSH	National Institute of Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NR	Not Rated
NRC	Nuclear Regulatory Commission
ORNL	Oak Ridge National Laboratory
ORR	Oak Ridge Reservation
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyls
PPE	Personnel Protection Equipment
QAPP	Quality Assurance Project Plan
R&D	Research and Development
RCRA	Resource Conservation and Recovery Act
RFETS	Rocky Flats Environmental Technology Site
SEA	Science & Engineering Associates, Inc.
SNL	Sandia National Laboratory
SRS	Savannah River Site
TAP	Technology Assessment Program
TLG	Tom LaGuardia
TRU	Transuranic
USACE	United States Army Corps of Engineers
VACIS	Vehicle and Cargo Inspection System
WSRC	Westinghouse Savannah River Company

Appendix B
Technology Maturity Tables

Table 4: Product Maturity Status Determination

Tech ID: 2203

Title: TRU Waste Characterization, Decontamination and Disposition LSDDP at LANL LSDDP

Last Gate: 5

Date Last Gate Past: N/A

Year Next Gate Will be Passed: N/A

MATURITY STAGE	TECHNICAL NEED	END-USER INVOLVEMENT	TECHNICAL MERIT	COST	ES & H RISK	STAKEHOLDER, REGULATORY, TRIBAL ISSUES	COMMERCIAL VIABILITY
Research	<input type="checkbox"/> Relevant to high-priority need		<input type="checkbox"/> Highly meritorious				
Development	<input type="checkbox"/> Need still exists	<input type="checkbox"/> Addresses performance requirements <input type="checkbox"/> Available when needed	<input type="checkbox"/> Improved solution (enabling or significantly more effective) <input type="checkbox"/> Favorable peer review rating	<input type="checkbox"/> Improved solution (enabling or significantly less costly) <input type="checkbox"/> Demonstration and operating costs estimated	<input type="checkbox"/> Improved solution (enabling or significantly lower risk) <input type="checkbox"/> Favorable peer review rating	<input type="checkbox"/> Peer review finds data valid for use with regulators and stakeholders	<input type="checkbox"/> Potential vendor identified
Demonstration	<input checked="" type="checkbox"/> Need still exists	<input checked="" type="checkbox"/> Demonstration cost-sharing	<input checked="" type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input checked="" type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input checked="" type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input checked="" type="checkbox"/> Demonstration permits completed	<input checked="" type="checkbox"/> Vendor participates in demonstration

Date: June 11, 2001

PL/TI/WP Manager: Steve Bossart, DOE-NETL

Table 4: Product Maturity Status Determination

Tech ID: 2201

Title: Mound Tritium Facilities LSDDP Last Gate: 5

Date Last Gate Past: N/A

Year Next Gate Will be Passed: N/A

MATURITY STAGE	TECHNICAL NEED	END-USER INVOLVEMENT	TECHNICAL MERIT	COST	ES &H RISK	STAKEHOLDER, REGULATORY, TRIBAL ISSUES	COMMERCIAL VIABILITY
Research	<input type="checkbox"/> Relevant to high-priority need		<input type="checkbox"/> Highly meritorious				
Development	<input type="checkbox"/> Need still exists	<input type="checkbox"/> Addresses performance requirements <input type="checkbox"/> Available when needed	<input type="checkbox"/> Improved solution (enabling or significantly more effective) <input type="checkbox"/> Favorable peer review rating	<input type="checkbox"/> Improved solution (enabling or significantly less costly) <input type="checkbox"/> Demonstration and operating costs estimated	<input type="checkbox"/> Improved solution (enabling or significantly lower risk) <input type="checkbox"/> Favorable peer review rating	<input type="checkbox"/> Peer review finds data valid for use with regulators and stakeholders	<input type="checkbox"/> Potential vendor identified
Demonstration	<input checked="" type="checkbox"/> Need still exists	<input checked="" type="checkbox"/> Demonstration cost-sharing	<input checked="" type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input checked="" type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input checked="" type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input checked="" type="checkbox"/> Demonstration permits completed	<input checked="" type="checkbox"/> Vendor participates in demonstration

Date: June 11, 2001

PL/TI/WP Manager: Harold Shoemaker, DOE-NETL

Table 4: Product Maturity Status Determination

Tech ID: 2914

Title: Beryllium Surface and Air Monitors

Last Gate: 4

Date Last Gate Past: 10/2000

Year Next Gate Will be Passed: 2002

MATURITY STAGE	TECHNICAL NEED	END-USER INVOLVEMENT	TECHNICAL MERIT	COST	ES & H RISK	STAKEHOLDER, REGULATORY, TRIBAL ISSUES	COMMERCIAL VIABILITY
Research	<input type="checkbox"/> Relevant to high-priority need		<input type="checkbox"/> Highly meritorious				
Development	<input checked="" type="checkbox"/> Need still exists	<input checked="" type="checkbox"/> Addresses performance requirements <input type="checkbox"/> Available when needed	<input checked="" type="checkbox"/> Improved solution (enabling or significantly more effective) <input type="checkbox"/> Favorable peer review rating	<input type="checkbox"/> Improved solution (enabling or significantly less costly) <input type="checkbox"/> Demonstration and operating costs estimated	<input type="checkbox"/> Improved solution (enabling or significantly lower risk) <input type="checkbox"/> Favorable peer review rating	<input type="checkbox"/> Peer review finds data valid for use with regulators and stakeholders	<input checked="" type="checkbox"/> Potential vendor identified
Demonstration	<input type="checkbox"/> Need still exists	<input type="checkbox"/> Demonstration cost-sharing	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration permits completed	<input type="checkbox"/> Vendor participates in demonstration

Date: June 11, 2001

PL/TI/WP Manager: Adam Hutter, DOE-EML

Table 4: Product Maturity Status Determination

Tech ID: 2199

Title: Modular Manipulator for Robotic Applications

Last Gate: 4

Date Last Gate Past:05/98

Year Next Gate Will be Passed: 2001

MATURITY STAGE	TECHNICAL NEED	END-USER INVOLVEMENT	TECHNICAL MERIT	COST	ES & H RISK	STAKEHOLDER, REGULATORY, TRIBAL ISSUES	COMMERCIAL VIABILITY
Research	<input type="checkbox"/> Relevant to high-priority need		<input type="checkbox"/> Highly meritorious				
Development	<input checked="" type="checkbox"/> Need still exists	<input checked="" type="checkbox"/> Addresses performance requirements <input checked="" type="checkbox"/> Available when needed	<input checked="" type="checkbox"/> Improved solution (enabling or significantly more effective) <input type="checkbox"/> Favorable peer review rating	<input checked="" type="checkbox"/> Improved solution (enabling or significantly less costly) <input type="checkbox"/> Demonstration and operating costs estimated	<input checked="" type="checkbox"/> Improved solution (enabling or significantly lower risk) <input type="checkbox"/> Favorable peer review rating	<input type="checkbox"/> Peer review finds data valid for use with regulators and stakeholders	<input checked="" type="checkbox"/> Potential vendor identified
Demonstration	<input type="checkbox"/> Need still exists	<input type="checkbox"/> Demonstration cost-sharing	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration permits completed	<input type="checkbox"/> Vendor participates in demonstration

Date: June 11, 2001

PL/TI/WP Manager: Vijendra Kothari, DOE-NETL

Table 4: Product Maturity Status Determination

Tech ID: 2171 Title: Human Machine Cooperative Telerobotics (Robot Task Space Analyzer)

Last Gate: 4

Date Last Gate Past: 5/98

Year Next Gate will be Passed: 2001

MATURITY STAGE	TECHNICAL NEED	END-USER INVOLVEMENT	TECHNICAL MERIT	COST	ES & H RISK	STAKEHOLDER, REGULATORY, TRIBAL ISSUES	COMMERCIAL VIABILITY
Research	<input type="checkbox"/> Relevant to high-priority need		<input type="checkbox"/> Highly meritorious				
Development	<input checked="" type="checkbox"/> Need still exists	<input checked="" type="checkbox"/> Addresses performance requirements <input checked="" type="checkbox"/> Available when needed	<input checked="" type="checkbox"/> Improved solution (enabling or significantly more effective) <input checked="" type="checkbox"/> Favorable peer review rating	<input checked="" type="checkbox"/> Improved solution (enabling or significantly less costly) <input type="checkbox"/> Demonstration and operating costs estimated	<input checked="" type="checkbox"/> Improved solution (enabling or significantly lower risk) <input type="checkbox"/> Favorable peer review rating	<input type="checkbox"/> Peer review finds data valid for use with regulators and stakeholders	<input checked="" type="checkbox"/> Potential vendor identified
Demonstration	<input type="checkbox"/> Need still exists	<input type="checkbox"/> Demonstration cost-sharing	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration permits completed	<input type="checkbox"/> Vendor participates in demonstration

Date: June 11, 2001

PL/TI/WP Manager: Vijendra Kothari, DOE-NETL

Table 4: Product Maturity Status Determination

Tech ID: 2939

Title: Telerobotic Control

Last Gate: 4

Date Last Gate Past: 5/98

Year Next Gate Will be Passed: 2002

MATURITY STAGE	TECHNICAL NEED	END-USER INVOLVEMENT	TECHNICAL MERIT	COST	ES & H RISK	STAKEHOLDER, REGULATORY, TRIBAL ISSUES	COMMERCIAL VIABILITY
Research	<input type="checkbox"/> Relevant to high-priority need		<input type="checkbox"/> Highly meritorious				
Development	<input checked="" type="checkbox"/> Need still exists	<input checked="" type="checkbox"/> Addresses performance requirements <input checked="" type="checkbox"/> Available when needed	<input checked="" type="checkbox"/> Improved solution (enabling or significantly more effective) <input type="checkbox"/> Favorable peer review rating	<input checked="" type="checkbox"/> Improved solution (enabling or significantly less costly) <input type="checkbox"/> Demonstration and operating costs estimated	<input checked="" type="checkbox"/> Improved solution (enabling or significantly lower risk) <input type="checkbox"/> Favorable peer review rating	<input type="checkbox"/> Peer review finds data valid for use with regulators and stakeholders	<input checked="" type="checkbox"/> Potential vendor identified
Demonstration	<input type="checkbox"/> Need still exists	<input type="checkbox"/> Demonstration cost-sharing	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration permits completed	<input type="checkbox"/> Vendor participates in demonstration

Date: June 11, 2001

PL/TI/WP Manager: Dennis C. Haley, Rbx D&D PLM

Table 4: Product Maturity Status Determination

Tech ID: 2181

Title: Telerobotic Manipulation System

Last Gate: 4

Date Last Gate Past: 10/98

Year Next Gate Will be Passed: 2002

MATURITY STAGE	TECHNICAL NEED	END-USER INVOLVEMENT	TECHNICAL MERIT	COST	ES & H RISK	STAKEHOLDER, REGULATORY, TRIBAL ISSUES	COMMERCIAL VIABILITY
Research	<input type="checkbox"/> Relevant to high-priority need		<input type="checkbox"/> Highly meritorious				
Development	<input checked="" type="checkbox"/> Need still exists	<input checked="" type="checkbox"/> Addresses performance requirements <input checked="" type="checkbox"/> Available when needed	<input checked="" type="checkbox"/> Improved solution (enabling or significantly more effective) <input checked="" type="checkbox"/> Favorable peer review rating	<input checked="" type="checkbox"/> Improved solution (enabling or significantly less costly) <input type="checkbox"/> Demonstration and operating costs estimated	<input checked="" type="checkbox"/> Improved solution (enabling or significantly lower risk) <input checked="" type="checkbox"/> Favorable peer review rating	<input checked="" type="checkbox"/> Peer review finds data valid for use with regulators and stakeholders	<input checked="" type="checkbox"/> Potential vendor identified
Demonstration	<input type="checkbox"/> Need still exists	<input type="checkbox"/> Demonstration cost-sharing	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration permits completed	<input type="checkbox"/> Vendor participates in demonstration

Date: June 11, 2001

PL/TI/WP Manager: Dennis C. Haley, Rbx D&D PLM

Table 4: Product Maturity Status Determination

Tech ID: 2224

Title: High Productivity Vacuum Blasting System

Last Gate: 4

Date Last Gate Past: 10/99

Year Next Gate Will be Passed: 2001

MATURITY STAGE	TECHNICAL NEED	END-USER INVOLVEMENT	TECHNICAL MERIT	COST	ES & H RISK	STAKEHOLDER, REGULATORY, TRIBAL ISSUES	COMMERCIAL VIABILITY
Research	<input type="checkbox"/> Relevant to high-priority need		<input type="checkbox"/> Highly meritorious				
Development	<input checked="" type="checkbox"/> Need still exists	<input checked="" type="checkbox"/> Addresses performance requirements <input type="checkbox"/> Available when needed	<input checked="" type="checkbox"/> Improved solution (enabling or significantly more effective) <input type="checkbox"/> Favorable peer review rating	<input checked="" type="checkbox"/> Improved solution (enabling or significantly less costly) <input type="checkbox"/> Demonstration and operating costs estimated	<input checked="" type="checkbox"/> Improved solution (enabling or significantly lower risk) <input type="checkbox"/> Favorable peer review rating	<input type="checkbox"/> Peer review finds data valid for use with regulators and stakeholders	<input checked="" type="checkbox"/> Potential vendor identified
Demonstration	<input type="checkbox"/> Need still exists	<input type="checkbox"/> Demonstration cost-sharing (Technology Developer provides significant cost share)	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration plan <input type="checkbox"/> Favorable peer review	<input type="checkbox"/> Demonstration permits completed	<input type="checkbox"/> Vendor participates in demonstration (Technology Developer is Vendor)

Date: June 11, 2001

PL/TI/WP Manager: David Schwartz; DOE-NETL

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Appendix C
Project Scores

Large-Scale D&D Projects
Average Scores

	Relevancy	Benefits			Progress				
Project #	Relevancy & Technical Approach	Performance	Cost Effectiveness	Env / Worker Health & Safety	Cost	Schedule	Communications	Stakeholder Involvement	Avg.
5	4	4	4	4	3	2	3	4	3
6	4	4	4	4	3	4	4	3	4

Research & Development Projects
Average Scores

	Relevancy	Benefits			Progress						
Project #	Relevancy & Technical Approach	Performance	Cost Effectiveness	Env / Worker Health & Safety	Cost	Schedule	Communications	Private Industry Involvement & Vendor ID	Stakeholder Involvement	End-user Commitment	Avg.
9	4	4	3	5	3	4	3	4	4	N/R	4
10	4	4	4	2	1	2	4	4	3	2	3
11	3	4	4	4	2	3	2	4	2	3	3
12	3	3	3	3	2	2	4	4	4	3	3
13	3	3	4	3	3	3	3	4	3	3	3
14	3	3	3	3	3	3	3	3	N/R	3	3
15	4	4	4	3	3	3	3	N/R	N/R	N/R	4
18	4	4	4	4	2	3	4	3	5	3	3
19	4	4	3	5	2	3	4	3	4	3	4
20	4	5	N/R	N/R	3	3	4	2	N/R	N/R	4
21	3	3	N/R	N/R	1	3	3	N/R	N/R	N/R	3
22	4	4	4	4	3	4	4	4	4	3	3
Average	4	4	3	4	2	3	3	3	3	3	3

**Deployment Projects
Average Scores**

	Relevancy	Benefits			Progress				
Project #	Relevancy & Technical Approach	Performance	Cost Effectiveness	Env / Worker Health & Safety	Cost	Schedule	Communications	Stakeholder Involvement	Avg.
16	3	4	4	4	2	3	3	3	3
28	4	4	3	5	3	4	3	3	4
29	5	5	5	4	4	4	4	4	4
30	4	4	4	4	3	3	3	3	4
31	4	4	4	4	4	4	4	4	4
32	3	4	4	3	3	2	3	3	3
33	3	3	3	3	1	2	3	3	3
34	4	5	5	5	4	3	3	3	4
35	4	4	N/R	3	2	3	2	N/R	3
36	4	3	1	4	3	3	3	3	3
37	3	3	3	3	3	3	4	4	3
Average	4	4	4	4	3	3	3	3	3

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Appendix D Reviewer Comments

Project Title: TRU Waste Characterization, Decontamination and Disposition at LANL LSDDP

Presenter(s): John McFee, IT Corp.

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

Appear to be numerous needs associated.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3

Acceptable if only focused on already retrieved waste.

Robert C. Thomas Not Rated/NA

This area has little commercial utility D&D relevance. Some benefit might be gained with work on improved air filtration systems.

Would like to see more information on the BPC-4 and the Evolution 180 Saw for steel. These might have potential application for commercial D&D sites. Possibly a demonstration/deployment opportunity.

Roger H. Liddle 5

Excellent use of commercial technology for DOE specific tasks. Should have extensive use for most of the technologies in D&D's within the complex.

Criterion 2: Benefits - Performance

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3

The MCS radiography technology appears to be a good selection of technology.

Robert C. Thomas 3

Roger H. Liddle	5
<i>Demonstrated performance for the air lifting and exterior inspection systems.</i>	

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker	Not Rated/NA
<i>No baseline - risk reduction only.</i>	

Einar Ronningen	Not Rated/NA
-----------------	--------------

James Rang	Not Rated/NA
------------	--------------

Richard Nevarez	4
<i>The cost effectiveness on demonstrated technology was slightly better than the baseline cost provided.</i>	

Robert C. Thomas	3
------------------	---

Roger H. Liddle	5
<i>High potential for cost avoidance from "exterior" visualization equipment.</i>	

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker	4
<i>Cutting tools only.</i>	

Einar Ronningen	Not Rated/NA
-----------------	--------------

James Rang	Not Rated/NA
------------	--------------

Richard Nevarez	3
<i>It was not clear how the project controlled dust during saw operations in a radiological controlled environment, or how these would function in such an environment.</i>	

Robert C. Thomas	4
------------------	---

Roger H. Liddle	5
<i>"Pre-inspection should provide higher level of worker and environmental protection NTVision system should be valuable for Waste Management ongoing operations.</i>	

Criterion 5: Technical Progress - Cost

Drew Spiker	3
-------------	---

Einar Ronningen	Not Rated/NA
-----------------	--------------

James Rang Not Rated/NA

Richard Nevarez 2

ICT administrative cost performance was 3 times what was budgeted. All other costs appeared to be under budget.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Criterion 6: Technical Progress - Schedule

Drew Spiker 2

To the casual observer, it seems the list of potential demonstrations is unrealistic in fact many were taken off the list. Need to prioritize and move forward.

Einar Ronningen Not Rated/NA

James Rang 1

FY01 Schedule Slippage - No discussion on how to get back on schedule. Discussed only that was submitting for extension approval.

Richard Nevarez 1

This LSDDP appears to be slow to start. Instead of meeting in January to define work scope, it is suggested that they meet in August before the beginning of the execution fiscal year.

There are 14 potential FY01 demonstrations planned, most listed or presented were stated as being "on hold", or "planned for next year."

The subcontract of vendors will not be made by May 01.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Criterion 7: Technical Progress - Communications

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez
Was not presented. Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker 4

Used LA Techs to test mega-tech tools.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez
Was not presented. Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Reviewers Overall Project Comments

Einar Ronningen

Though portions of this project have some applicability to utility decommissioning projects (volume reduction techniques, decon methods), the commercial utility sector is not a stakeholder for the fundamental issue being addressed. Of particular interest: Evolution 180 saw for stainless, information on strippable coatings, NUKEM wire saw.

James Rang

Not Applicable to Commercial Utility Application, However it does appear that good cost effectiveness technologies were demonstrated in this LSDDP Project for DOE future use, especially in large volume deployment, i.e. air pallets, Vacis, Mega-Tech Blade Cutting Plunger. Project Schedule for FY01 though, is slipping and should not be taken lightly. No discussion on how to get back on schedule.

Richard Nevarez

The application of this LSDDP appears to be focused mostly on TRU retrieved crated gloveboxes. There is little evidence that the initiatives have been integrated into actual D&D projects. It would be more relevant if the scope was focused to address gloveboxes as they come out of the facility during deactivation so that DOE can avoid the costs of crating, transportation, etc., of the large objects.

The presenter did not provide performance specifications for the equipment used, versus the performance specifications for the baseline technology, thus it is difficult to rate performance.

Drew Spiker

Crated Large Metal objects are not an issue in commercial nuclear plant decommissioning. Limited review done.

Project Title: Mound Tritium Facilities LSDDP

Presenter(s): Donald Krause, BWXT

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 4

The approach and relevancy of this project are good. The project has demonstrated many different technologies, which can be used to stabilize tritium facilities.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 4

Very important, but limited applicability.

Criterion 2: Benefits - Performance

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3

The solidification processes used for oils and water appear to be effective. Application of these processes could continue at other sites.

No schedule performance information was presented against baseline information.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 5

Project is evaluating many promising approaches.

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3

Cost effectiveness information was not presented for all technologies used. Not possible to evaluate the cost effectiveness of technology used versus the baseline. However, in most cases the baseline technology was identified, just no cost for either.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 5

Many of the technologies tested should be very cost effective.

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3

Some efforts to reduce secondary waste were discussed (I.e. TechXTract). Others were not real obvious. There was some discussion of regulatory issues using asphalt. This presents a slight project risk.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 5

If successful most of the technologies tested will provide enhanced worker and environment protection.

Criterion 5: Technical Progress - Cost

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 5

N/A for Utility use, however cost are being managed below budget for DOE use – Excellent.

Richard Nevarez	1
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No cost information was provided for FY 2001, could not assess cost performance. However, the funding identified for FY 01 is \$500,000.

Robert C. Thomas	4
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Roger H. Liddle	3
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Criterion 6: Technical Progress - Schedule

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	4
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Schedule looks OK to manage to closure w/o overruns.

Richard Nevarez	2
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They do not anticipate achieving more than the 20 demos, which were originally planned.

The do not anticipate achieving their FY01 schedule.

Robert C. Thomas	3
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Roger H. Liddle	5
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Keeping ahead of the mound needs.

Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	3
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Plan appears acceptable.

Richard Nevarez	3
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The communications plan is good.

Robert C. Thomas	3
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Roger H. Liddle	5
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Using many organizations in demo should lead to maximum use of technologies at other sites with tritium problems.

Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 3

DOE Stakeholders were identified up front, appears to be on target.

Richard Nevarez 3

Presentation indicates that there are 2 stakeholder meetings per year.

Robert C. Thomas 3

Roger H. Liddle 4

Good from the perspective of involving many other potential users.

Reviewers Overall Project Comments

Einar Ronningen

The commercial utility sector is not a stakeholder for the fundamental issues being addressed due to the relatively small scope of tritium contamination at commercial plants. Some applicability for tritium characterization of LLW (current methods involve conservative assumptions) depending on cost. Also, processing of tritiated water may become an issue for the commercial sector as EPA standards are applied for discharged water through the NPDES process, though the commercial scope is many (10-12) orders of magnitude lower than the DOE needs discussed. Contamination fixatives may also cross over well.

Robert C. Thomas

There are no utility D&D needs in the technologies demonstrated in this area. Technologies seem well suited across the DOE complex.

James Rang

Tritium applicability - N/A to US Commercial Utility use.

Richard Nevarez

The baseline for tubing is to cut and cap. This is somewhat a different approach from what is being suggested from Los Alamos, at Los Alamos it is being suggested that the tubing just be cut and left open to vent, it is thought that this will alleviate source term buildup. For the most part, it was difficult to evaluate/rate the benefits of the technologies presented against the baseline. Information was not provided to enable this type of evaluation.

Roger H. Liddle

Overall this project seems to have been very successful for clean ups of tritium facilities.

Project Title: Beryllium Surface and Air Monitors

Presenter(s): Steven J. Saggese, SEA

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 5

Well thought through project.

Einar Ronningen 4

Based upon comparison with utility hazards.

James Rang 4

Good idea for real time data response for airborne or surface contamination.

Richard Nevarez 5

It is relevant to D&D. It still does not provide for immediate exposure information of Be. Takes up to 5 minutes to determine exposure.

Robert C. Thomas 4

Relevancy limited to DOE sites.

Roger H. Liddle 3

Criterion 2: Benefits - Performance

Drew Spiker 5

If it proves out, takes a 2-week task and turns it into 5 min.

Einar Ronningen Not Rated/NA

Not sure of results yet.

James Rang 4

Richard Nevarez 4

Does not provide "real time" results.

Robert C. Thomas 5

Calibration is clearly superior to baseline techniques. Ability for deconvolution is clearly an advantage.

Roger H. Liddle 3

Not demonstrated.

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

Unsure of final costs, but would need to be relatively inexpensive to employ at a utility (perfect for

a contractor to provide the capital investment).

James Rang Not Rated/NA

Cost data not available yet.

Richard Nevarez Not Rated/NA

Was not provided.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Issue is more one of personnel protection due to timing.

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker Not Rated/NA

Einar Ronningen 5

Reducing feedback time provides a superior product to baseline.

James Rang 4

Richard Nevarez Not Rated/NA

Was not provided.

Robert C. Thomas 5

Should lower worker exposures to beryllium.

Roger H. Liddle 5

Has a lot of potential for H&S benefit if it can be fielded.

Criterion 5: Technical Progress - Cost

Drew Spiker 4

Under budget.

Einar Ronningen Not Rated/NA

James Rang 4

Richard Nevarez 1

None was provided.

Robert C. Thomas 4

Roger H. Liddle 4

On Track to date.

Criterion 6: Technical Progress - Schedule

Drew Spiker 4

Working to beat the schedule.

Einar Ronningen 3

Based upon most utility D&D schedules, this is a long development schedule. However, for DOE schedules, it seems fine.

James Rang 4

Richard Nevarez 2

Instrument design is about 2 months behind schedule. The manufacturing timeline has not changed with it. It is probable that the manufacturing schedule will also slide.

Robert C. Thomas 4

Roger H. Liddle 4

On proposed schedule.

Criterion 7: Technical Progress - Communications

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 3

Richard Nevarez Not Rated/NA

Not provided.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker 4

Working with the RF personnel.

Einar Ronningen 4

Looks like a broad involvement.

James Rang 3

Richard Nevarez	Not Rated/NA
<i>Not provided.</i>	

Robert C. Thomas	4
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Roger H. Liddle	4
<i>Working with several potential end-users.</i>	

Criterion 9: Technical Progress - End-user Commitment

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
<i>Unsure of commitment, but shouldn't be a problem if it works.</i>	

James Rang	Not Rated/NA
<i>Not there yet.</i>	

Richard Nevarez	Not Rated/NA
<i>Not provided.</i>	

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker	4
<i>Seem to have good cooperation with a number of DOE groups.</i>	

Einar Ronningen	4
<i>Good involvement with University of ND and development contractors.</i>	

James Rang	3
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Richard Nevarez	Not Rated/NA
<i>Not provided.</i>	

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Reviewers Overall Project Comments

Einar Ronningen

The commercial industry would not be a stakeholder for this technology as developed. Similarities exist in

the monitoring of lead and hexavalent chrome, however only during active thermal cutting of materials (coated surfaces with lead-based coatings, cutting of stainless for hexavalent chrome). Based upon the cost of deployment, could be beneficial over baseline (sending samples to lab) for air monitoring during cutting if adaptable to the mentioned hazards.

Robert C. Thomas

Airborne and surface Beryllium are not utility D&D concerns. No application for commercial sites.

James Rang

Limited Utility use, i.e. neutron sources.

Richard Nevarez

Drew Spiker

Looks like a well managed project.

Roger H. Liddle

Project seems a bit too complex for actual field use. Primary concern is the apparatus for cooling/cleaning. Hard to see it really working in the field.

Project Title: Characterization Engineering Initiative

Presenter(s): Dave Roelant, FIU

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

Taking advantage of what has already been done. Good.

Einar Ronningen 4

Any work with the NRC? Is the NRC a part of the ITRC? What is impact of this project if DOE comes under NRC regulation?

James Rang 5

Project objective to require regulatory acceptance for real-time characterization of technologies should be of utmost priority.

Richard Nevarez 1

The scope is not clear. It appears that this is more of a paper study, than it is a demonstration of various technologies.

The technology approach does not clearly articulate how this will work through DOE to engage particular regulatory agencies. Most sites have state regulatory agencies, and often it is the sites authority to negotiate with their respective agencies.

Robert C. Thomas 4

This project has a high degree of relevance for DOE as based on established needs.

Roger H. Liddle 4

Highly desirable if it can be accomplished.

Criterion 2: Benefits - Performance

Drew Spiker 4

Making better use of what's available.

Einar Ronningen. 5

A technology that works is not useful if the regulators will not accept the results.

James Rang Not Rated/NA

Richard Nevarez 1

No performance information was provided to indicate how DOE will benefit.

Robert C. Thomas 4

Good screening of currently available characterization technologies. The question remains whether there will ever be "free release" acceptance for contaminated materials.

Roger H. Liddle
New project. Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker 5
If regulatory approval can be obtained.

Einar Ronningen Not Rated/NA
Based upon the potential benefits, unless this project is hugely expensive, the cost effectiveness will be based upon the individual technologies. Need to involve more technologies for maximum cost effectiveness.

James Rang Not Rated/NA

Richard Nevarez 1
Cost was not provided. Nor was a baseline.

Robert C. Thomas 5

Roger H. Liddle Not Rated/NA
New project.

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker Not Rated/NA

Einar Ronningen 3
Depends upon the technology, but has the potential for improving projects as far as H&S is concerned.

James Rang Not Rated/NA

Richard Nevarez 1
Was not provided.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA
New project.

Criterion 5: Technical Progress - Cost

Drew Spiker Not Rated/NA
Too early to tell.

Einar Ronningen Not Rated/NA

Unsure of cost.

James Rang Not Rated/NA

Richard Nevarez 1

Cost information was not provided.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

New project.

Criterion 6: Technical Progress - Schedule

Drew Spiker Not Rated/NA

Too early to tell.

Einar Ronningen Not Rated/NA

The sooner the better.

James Rang Not Rated/NA

Richard Nevarez 1

The schedule appears very optimistic. If a DOE site has not been selected at this point, it may be difficult to achieve the end date.

Robert C. Thomas 3

Roger H. Liddle Not Rated/NA

New project.

Criterion 7: Technical Progress - Communications

Drew Spiker 5

Taking good advantage of FIU website.

Einar Ronningen 3

NRC?

James Rang Not Rated/NA

Richard Nevarez 2

Robert C. Thomas 4

Roger H. Liddle 4

Good start with web site.

Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 1

None was provided, and being that the objective may result in promulgation of new requirements/standards/methods for characterization, it is likely that stakeholder involvement will be necessary.

Robert C. Thomas 4

Roger H. Liddle 3

Beginning to involve outside groups.

Criterion 9: Technical Progress - End-user Commitment

Drew Spiker 3

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 1

Not presented.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

New project.

Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker 4

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez
Not presented. Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Reviewers Overall Project Comments

Einar Ronningen

For utilities, characterization is most important (cost, schedule) for D&D projects using a DOC, but is required for all D&D projects. This project has some benefit as it stands for crossover items, e.g., common EPA- and State-regulated items, but has less importance without NRC involvement.

Robert C. Thomas

This work has a high degree of relevancy for commercial D&D sites. Utilities are currently caught up with conflicting requirements for site release between NRC/EPA and even state agencies. It seems apparent that DOE sites don't have this problem.

James Rang

Just getting started but should receive hi priority. Would be a great benefit to utilities.

Richard Nevarez

I am assuming that the briefing was the "Regulatory Acceptance for Improved Real-time Characterization Technologies", versus the "Characterization Engineering Initiative". Not clear to which "regulators" this project is targeting.

Drew Spiker

Roger H. Liddle

Overall a good effort to compile the benefits from other projects.

Project Title: Modular Manipulator for Robotic Applications

Presenter(s): Derek Black, ARM Automation, Inc.

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 2

Flexible design.

Einar Ronningen 3

Limited use of robotics in utility D&D, however, improvements in abilities and reduced cost may increase acceptance by utilities.

James Rang 4

Conducted survey of robotics needs and baselines. Develop 2nd and 3rd generation and integrate. Twist type ferrets - good approach to meet obj.

Richard Nevarez 2

The technical approach was very good, could be improved with definition of an end user up front.

Robert C. Thomas 4

See overall project comments.

Roger H. Liddle 5

Project has benefited from a survey of "needs" from the user community. Also builds on existing knowledge from outside industry.

Criterion 2: Benefits - Performance

Drew Spiker Not Rated/NA

Nothing to compare to, as final product will be some custom design.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Demo setup is underway.

Richard Nevarez 3

No operational data provided, still being developed.

Robert C. Thomas 4

Envision only limited application. Will not see the wholesale benefit such as seen in the food industry.

Roger H. Liddle 5

Should be better than baseline.

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen 3

Neutral because of the limited applications in utility facilities.

James Rang Not Rated/NA

Richard Nevarez 3

No cost data provided, still being developed.

Robert C. Thomas Not Rated/NA

Robotics only becomes cost effective with repetitive tasks. Questionable whether dollar savings will be seen. The more important benefit may be due to H&S concerns.

Roger H. Liddle 5

Should be better than baseline.

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker Not Rated/NA

Einar Ronningen 3

Neutral because of the limited applications in utility facilities.

James Rang Not Rated/NA

Richard Nevarez 3

No ES&H data provided, still being developed.

Robert C. Thomas 4

Roger H. Liddle 5

Should be better than baseline.

Criterion 5: Technical Progress - Cost

Drew Spiker Not Rated/NA

No cost data provided.

Einar Ronningen Not Rated/NA

James Rang 2

If can complete in timeframe established.

Richard Nevarez 1

No cost information was provided, not able to assess.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 4

Criterion 6: Technical Progress - Schedule

Drew Spiker 4

On schedule however there will be no glove box test performed.

Einar Ronningen 3

Individual utility facility schedules usually won't accommodate technology development, but there is plenty of time to impact the overall utility mortgage.

James Rang 2

Richard Nevarez 1

Schedule has slipped by 6 months according to briefing.

Robert C. Thomas 3

Roger H. Liddle 4

Criterion 7: Technical Progress - Communications

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 2

Lab communication problems - result in delay.

Richard Nevarez Not Rated/NA

Not presented.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 2

Surprising considering potential.

Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker 2

Little involvement of stakeholders.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA
Still need to complete.

Richard Nevarez Not Rated/NA
Not presented.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 2
Surprising considering potential.

Criterion 9: Technical Progress - End-user Commitment

Drew Spiker 2
Who is the end user?

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA
Still need to complete.

Richard Nevarez Not Rated/NA
Not presented. Still looking for a site to demo.

Robert C. Thomas 4

Roger H. Liddle 2
Surprising considering potential.

Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker Not Rated/NA

Einar Ronningen 4
Involvement even outside of the D&D arena should help speed improvements in the technology.

James Rang Not Rated/NA

Richard Nevarez Not Rated/NA
Not presented.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Reviewers Overall Project Comments

Einar Ronningen

These types of technologies are best for repetitive tasks, however the tasks appropriate for remote technologies are for the most part single-time use types of applications at most utility sites, like reactor vessel internals cut-up, or hot-spot removal. Access issues exist, but are being addressed. Don't know if the size of deployment will accommodate the often tight access in many parts of a utility site, or if the scale is appropriate for utility work (size of components that would benefit from remote access).

Robert C. Thomas

Glovebox automation is a DOE complex issue, not a commercial utility issue. Little relevance for utility D&D sites.

James Rang

2 years into project. Demo setup is underway. Presently introducing system to commercial manufacturing.

Richard Nevarez

Robotics such as this may be useful during facility stabilization, prior to transition to EM.

Drew Spiker

It looks like they have a functioning robot, developed for a number of identified needs, but have not yet identified an actual application on which to use it. Where is the stakeholder and end-user input on this project??

Roger H. Liddle

Project would seem to have a lot of potential. Not a lot of indication of customers however?? It seems that the customer should have been better identified up front

Project Title: Human Machine Cooperative Telerobotics(Robot Task Space Analyzer)

Presenter(s): William Hamel, UT

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 3

Based on needs list.

Einar Ronningen 2

Per utility D&D needs. Little requirement for remote systems.

James Rang 3

Richard Nevarez 3

Application of the cutting technology, and robotics is relevant to areas with high radioactive contamination.

Robert C. Thomas 3

Specific software needs to be written for each new application. Once again, this is probably good for repetitive applications.

Roger H. Liddle 3

Criterion 2: Benefits - Performance

Drew Spiker 3

Depends on operator skill level.

Einar Ronningen 5

Potential to be far superior to baseline.

James Rang Not Rated/NA

Richard Nevarez 2

Accuracy is somewhat limited.

Robert C. Thomas 3

Skill level is fairly high, is this a problem for typical D&D workers?

Roger H. Liddle 3

See overall comment.

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker 3

Ditto.

Einar Ronningen 2

Neutral for utilities because of the limited use of remote technologies in general.

James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Cost effectiveness provided was very limited. The process line demonstrated was also a very simple depiction of processing pipes.

Robert C. Thomas	Not Rated/NA
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Not sure whether this will be cost competitive with baseline technologies.

Roger H. Liddle	3
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See overall comment.

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker	Not Rated/NA
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Einar Ronningen	3
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Neutral benefit since it is improvement over other remote systems, however potential gains in expanding the usability of remote systems, e.g., increases in performance may make remote systems appropriate in more circumstance.

James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	4
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Roger H. Liddle	3
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See overall comment.

Criterion 5: Technical Progress - Cost

Drew Spiker	Not Rated/NA
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No data proved.

Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	1
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Cost information was not provided. Not clear how much has been spent in FY01 or prior years.

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
<i>See overall comment.</i>	

Criterion 6: Technical Progress - Schedule

Drew Spiker	Not Rated/NA
<i>Don't have original schedule. Just know it will be done in June.</i>	

Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	1
<i>Not clear what the status of this project is against defined milestones. A schedule was not provided.</i>	

Robert C. Thomas	3
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Roger H. Liddle	3
<i>See overall comment.</i>	

Criterion 7: Technical Progress - Communications

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
<i>Not provided.</i>	

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
<i>See overall comment.</i>	

Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	4
<i>All are waiting for full scale demo.</i>	

Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez <i>Not provided.</i>	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle <i>See overall comment.</i>	3
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Criterion 9: Technical Progress - End-user Commitment

Drew Spiker	3
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez <i>Not provided.</i>	Not Rated/NA
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Robert C. Thomas	3
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Roger H. Liddle <i>See overall comment.</i>	3
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Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker	4
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Einar Ronningen <i>Coordination of several suppliers.</i>	4
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James Rang	Not Rated/NA
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Richard Nevarez <i>Not provided.</i>	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Reviewers Overall Project Comments

Einar Ronningen

Technically, the improvements possible by implementation of this technology group will make remotely operated technologies more desirable for implementation. However, the utility sector has very limited use for remote/robotic applications at the current stage of development. Even with advances in remote operation, the inherent inefficiencies in any remote operation are prohibitive for most applications in the utility sector.

Robert C. Thomas

Utility D&D sites have been using Brokk manipulators successfully for demolition activities for years. Limitations are primarily space availability and obstructions (i.e., piping systems).

James Rang

D&D Automation of robotics is prime objective. Not advanced to rate performance, cost effective. Full scale test and evaluation still in progress. No comparison data yet. Though prelims look promising. But don't yet have operator feedback.

Richard Nevarez

With a +- .5 inches it may not be useful to identify small .25 inch piping.

Drew Spiker

Roger H. Liddle

As with the other Robotics projects, this is an R&D project that may yield significant benefits in the long term. I would expect that spin offs of individual part of these projects would be the principal benefit. These projects will need to be tailored over time to suit more specific needs. Without adding this specificity there will not be the driver to change the project from "research" to "application"

Project Title: Telerobotic Control
Presenter(s): Dennis Haley, ORNL

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

Long term applicability. Clearly looking ahead to more difficult future tasks.

Einar Ronningen Not Rated/NA

James Rang 3

Tech approach seems reasonable but still early to have appropriate feedback.

Richard Nevarez 2

Although information was presented, it does not clearly identify how they intend to get from point A to point B, with point B being the end point.

With the exception of deployment of this into a highly radioactive environment, or into Hanford Tanks, I am not sure where else one would use such expensive equipment.

Robert C. Thomas Not Rated/NA

Not reviewed.

Roger H. Liddle 3

Criterion 2: Benefits - Performance

Drew Spiker 4

Baseline is an unused system. Hard to judge at this stage.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Still too early. Do seem to have baseline for comparison.

Richard Nevarez 3

The assumption is that it will be an enhancement over non-traditional methods, although a demonstration has not been performed.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker 5

Skilled operator issue.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3

The assumption is that it will be an enhancement over non-traditional methods, although a demonstration has not been performed.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker 3

In this case it doesn't make an improvement of telerobots manually operated.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3

The assumption is that it will be an enhancement over non-traditional methods, although a demonstration has not been performed.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Criterion 5: Technical Progress - Cost

Drew Spiker 4

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3

Only a slight cost variance was provided for ORNL, a 5% overrun.

Robert C. Thomas Not Rated/NA

Roger H. Liddle	3
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Criterion 6: Technical Progress - Schedule

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	3
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For PNNL, information was not provided. For ORNL the variances were small.

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 7: Technical Progress - Communications

Drew Spiker	4
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Standard methods.

Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	3
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	3
-----------------	---

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 9: Technical Progress - End-user Commitment

Drew Spiker	5
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Hanford.

Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	2
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Mostly focused at Hanford Tanks, and the Tank Focus Area.

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Reviewers Overall Project Comments

Einar Ronningen

This technology transitions remote/robotic systems to autonomous systems. These systems are important for repetitive tasks, but are not ideally suited for most utilities to use. The breakthroughs in this area would have to be orders of magnitude to be practical (and even then may not be) for any widespread mobilization in the commercial D&D sector.

Robert C. Thomas

This technology probably has a fair amount of relevance to DOE complex activities.

Relevance to utility D&D operations will probably be limited.

James Rang

Project goals established for long-term development. Goal to define interface. No data to rate on.

Richard Nevarez

I am assuming that this project is the same as the Rbx D&D product line. I was not clear about the extent of the project scope. Was it a product line? The presenter's assumption/definition of baseline was the use of a remote system. For comparison purposes that is what was used. This is in contrast to what the Hanford site project baseline indicates.

Drew Spiker

Comments apply to both Telerobotic Control and Manipulation projects. Although every effort is being made to anticipate technology updates, 5 years could make this out of date when complete.

Roger H. Liddle

As with the other Robotics projects, this is an R&D project that may yield significant benefits in the long term. I would expect that spin offs of individual part of these projects would be the principal benefit. These projects will need to be tailored over time to suit more specific needs. Without adding this specificity there will not be the driver to change the project from "research" to "application".

Project Title: Telerobotic Manipulation System

Presenter(s): Dennis Haley, ORNL

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 3

Richard Nevarez 2

Although information was presented, it does not clearly identify how they intend to get from point A to point B, with point B being the end point.

With the exception of deployment of this into a highly radioactive environment, or into Hanford Tanks, I am not sure where else one would use such expensive equipment.

Robert C. Thomas Not Rated/NA

Not reviewed.

Roger H. Liddle 3

Criterion 2: Benefits - Performance

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3

The assumption is that it will be an enhancement over non-traditional methods, although a demonstration has not been performed.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	3
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The assumption is that it will be an enhancement over non-traditional methods, although a demonstration has not been performed.

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	3
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The assumption is that it will be an enhancement over non-traditional methods, although a demonstration has not been performed.

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 5: Technical Progress - Cost

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	3
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See comments on prior "Telerobotic project".

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 6: Technical Progress - Schedule

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	3
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See comments on prior "Telerobotic project".

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 9: Technical Progress - End-user Commitment

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	2
<i>Mostly focused at Hanford Tanks, and the Tank Focus Area.</i>	

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Reviewers Overall Project Comments

Einar Ronningen

This technology transitions remote/robotic systems to autonomous systems. These systems are important for repetitive tasks, but are not ideally suited for most utilities to use. The breakthroughs in this area would have to be orders of magnitude to be practical (and even then may not be) for any widespread mobilization in the commercial D&D sector. Examples of remote operations for utilities include fuel movement and

internals cutup. Fuel movement is performed remotely already. Automation of fuel movement systems would require NRC approval: possible, but difficult to program a computer take contingent actions, while current systems are proven safe and effective and provide little cost-benefit for improvement. Internals cutup may benefit from improvements in this area, but the real problems with this type of project are not the remote controls, but other more mundane problems, such as maintaining water clarity during cutting, production of and handling secondary wastes resulting from cutting, etc.

James Rang

It's too early in program to rate.

Richard Nevarez

I am assuming that this project is the same as the Rbx D&D product line. I was not clear about the extent of the project scope. Was it a product line? The presenter's assumption/definition of baseline was the use of a remote system. For comparison purposes that is what was used. This is in contrast to what the Hanford site project baseline indicates.

Drew Spiker

See Telerobotic Control comments.

Roger H. Liddle

As with the other Robotics projects, this is an R&D project that may yield significant benefits in the long term. I would expect that spin offs of individual part of these projects would be the principal benefit. These projects will need to be tailored over time to suit more specific needs. Without adding this specificity there will not be the driver to change the project from "research" to "application".

Project Title: High Productivity Vacuum Blasting System

Presenter(s): William McPhee, LTC Teletrak, Inc.

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker Not Rated/NA

No end user or needs identified.

Einar Ronningen 4

Decon of materials using blasting technologies is potentially beneficial to the utility industry, depending on the management of the D&D project.

James Rang 4

To redesign nozzles. Approach to reach goal appears to be technically sound.

Richard Nevarez 3

This project is relevant to D&D.

Robert C. Thomas 4

Sound technical approach.

Roger H. Liddle 5

Looking at improvement on existing technology with considerable needs base.

Criterion 2: Benefits - Performance

Drew Spiker 5

Based on data provided.

Einar Ronningen 4

Increased performance as far as amount of surface area covered per unit time not an issue; safety was the issue in our experience. Lift off sensor not an issue, irregularities in surfaces were responsible for safety hazards, not blast head lift from the surface. Real-time feedback may hinder performance, rather than improve it for utility-type work. This is because items suitable for blasting can be blasted much more quickly than they can be surveyed. Attempting to control a blast-head in operation for a simultaneous free release survey would be difficult at best and provides too much possibility of error in performing the survey, which, in our political climate, is unacceptable.

James Rang 5

Received 36% to 52% improvement in cleaning rate.

Richard Nevarez 3

It appears that the cleaning rate was improved with the new design. Not clear if collection of dust particles was any better.

Robert C. Thomas 4

The comparative cleaning rates of this system versus baseline technologies is still only a modest improvement. Not really a tool for large decontamination efforts.

Roger H. Liddle 5

If it works these improvements will be significant.

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen 3

James Rang Not Rated/NA

No cost data available yet.

Richard Nevarez Not Rated/NA

Cost performance information was not provided.

Robert C. Thomas 4

Reduced secondary waste and working grit will give the system an edge over baseline technologies. Incorporating radiation sensors is an important design feature, which facilitates decontamination activities.

Roger H. Liddle 5

Again, if it works the ability to clean "just the right amount" will lead to cost savings.

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker 5

If it ultimately works, far superior to tents and airborne issues.

Einar Ronningen 3

Materials that are suitable for decon by these methods do not present sufficient personnel hazards for efficiency gains to matter here. More important is the safety issues mentioned for habitability in the vicinity of the unit during operation.

James Rang 4

Richard Nevarez Not Rated/NA

Information not provided.

Robert C. Thomas 2

Concerned about blow by especially for non-smooth surfaces. This has been problematic for grit blast systems.

Roger H. Liddle 3

Project is more designed to improve cleaning effectiveness. Should have little effect on H&S.

Criterion 5: Technical Progress - Cost

Drew Spiker	Not Rated/NA
<i>No data provided.</i>	

Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	1
<i>Information was not provided.</i>	

Robert C. Thomas	4
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Roger H. Liddle	3
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Criterion 6: Technical Progress - Schedule

Drew Spiker	Not Rated/NA
<i>No data provided.</i>	

Einar Ronningen	Not Rated/NA
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James Rang	4
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Richard Nevarez	2
<i>Information provided was inadequate. No clear end dates provided to indicate status against. Only phases were identified, but with no dates.</i>	

Robert C. Thomas	3
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Roger H. Liddle	3
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Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Improvement of existing technology.

Criterion 9: Technical Progress - End-user Commitment

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Improvement of existing technology.

Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez

Not Rated/NA

Robert C. Thomas

Not Rated/NA

Roger H. Liddle

Not Rated/NA

Improvement of existing technology.

Reviewers Overall Project Comments

Einar Ronningen

Due to the "non-perfect" condition of surfaces during D&D, operation of a vacuum blasting system at Rancho Seco was discontinued due to personnel safety issues involving rogue-blasting particles. For general information, grit blast as a method of decontamination for free release of materials was found to be very cost effective for carbon steel, to the magnitude that Rancho Seco has decontaminated and released millions of pounds of carbon steel.

Robert C. Thomas

High degree of relevance for utility D&D work.

James Rang

Goal was to increase baseline technology productivity and economics by 50%.

Richard Nevarez

Cost information/status was not provided for FY01. For the schedule information, there were no dates provided.

Drew Spiker

Many areas not covered in presentation, although results seem to being achieved.

Project Title: AEA Technologies (Multiple Tasks)

Presenter(s): Mark Morgan, AEA

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

Too many projects discussed to give one overall rating.

James Rang Not Rated/NA

Using biodegradable media to enhance performance. Demo of tank inspection maybe next year.

Richard Nevarez 3

Robert C. Thomas 3

Roger H. Liddle 3

Criterion 2: Benefits - Performance

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Too early.

Richard Nevarez 3

No baseline for comparison purposes was identified.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 5

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Too early to demo yet.

Richard Nevarez 3

No baseline for comparison purposes was identified.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 5

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3

No baseline for comparison purposes was identified.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 5

Criterion 5: Technical Progress - Cost

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 1

Cost information was not provided.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Criterion 6: Technical Progress - Schedule

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Reviewers Overall Project Comments

Einar Ronningen

Sponge blasting: perhaps of benefit in isolated cases in the utility. Main benefit may be on the use of lead decon. Baseline technology has proven to be more cost-effective for other uses in most cases. Duct decon project probably not applicable to utility sector. Tank technology probably not applicable to utility sector. Retention basin project: could have some aspect of applicability for characterization of concrete at utilities, especially when chasing cracks where contamination might have entered large, complex concrete structures/geometries. Hot Cell project n/a for the most part for utility sector.

Robert C. Thomas

Decontamination effectiveness will be limited on complex designs. This is true for all standoff type decon systems. Doubtful whether this will have a high degree of relevance for utility D&D's.

Richard Nevarez

Project cost information was not provided.

Roger H. Liddle

Project is a mix of individual tasks with good scope and impacts. Each task seems to be appropriate to its respective need and on track to meet user needs.

Project Title: Technology Development, Integration and Deployment Program

Presenter(s): Rob Rose, FIU

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

Addressing very specific needs.

Einar Ronningen 3

The deployment and testing in actual D&D settings is the most critical portion of the approach.

James Rang 4

Richard Nevarez 3

The technologies being developed are good. They appear to be focused on making the job easier for the field worker performing the task.

Robert C. Thomas 4

Good overall discussion of the objectives and interface with DOE needs. High degree of relevance for commercial D&D activities.

Roger H. Liddle 4

Criterion 2: Benefits - Performance

Drew Spiker 4

Minor improvements utilizing existing tech.

Einar Ronningen Not Rated/NA

James Rang 3

No perf data given.

Richard Nevarez Not Rated/NA

Limited information provided. There was not enough information to perform an assessment.

Robert C. Thomas Not Rated/NA

Baseline technologies were not discussed so performance can't be contrasted.

Roger H. Liddle 4

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 3
No cost data given.

Richard Nevarez Not Rated/NA
Limited information provided. There was not enough information to perform an assessment.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 4

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 3
No data

Richard Nevarez Not Rated/NA
Limited information provided. There was not enough information to perform an assessment.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 4

Criterion 5: Technical Progress - Cost

Drew Spiker Not Rated/NA
No data provided.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA
No cost data.

Richard Nevarez 1
Cost was not provided.

Robert C. Thomas Not Rated/NA

Roger H. Liddle 3

Criterion 6: Technical Progress - Schedule

Drew Spiker 4

Einar Ronningen	Not Rated/NA
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James Rang	3
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On or ahead of schedule.

Richard Nevarez	3
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Robert C. Thomas	4
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Roger H. Liddle	3
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Criterion 7: Technical Progress - Communications

Drew Spiker	4
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Website.

Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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None covered.

Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Efforts seem adequate.

Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
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No discussion.

Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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None discussed.

Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	5
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Good match to identified needs.

Criterion 9: Technical Progress - End-user Commitment

Drew Spiker Not Rated/NA

No discussion.

Einar Ronningen Not Rated/NA

James Rang 3

Richard Nevarez Not Rated/NA

Robert C. Thomas 3

Roger H. Liddle 4

Projects seem to meet specific end user identified needs.

Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker Not Rated/NA

No discussion.

Einar Ronningen Not Rated/NA

James Rang 3

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Reviewers Overall Project Comments

Einar Ronningen

Benefits and technical progress not reviewed since the presentation is more about an overall program, rather than a specific technology.

Robert C. Thomas

Project provides good interfacing with commercial D&D efforts. This is a showcase for the cooperation between DOE/Florida International University and the commercial D&D sector.

James Rang

Developed project objectives for new technology development. Flexibility is there with additional scope added. Pipe Decon system, Crate size reduction, Improved cutting Technology.

Richard Nevarez

The prioritization of needs for technology development/deployment should at a minimum be done with the input of end-users. I would suggest use of the DDFA User Steering Committee to assist.

Roger H. Liddle

Since this project is a diverse mix of TD activities, it does not lend itself readily to this scoring matrix. The scores that I have given for each area are a reflection of my assessment that they seem to be working on areas that match needs and are making real time improvements to these areas.

Project Title: Worker Health & Safety Research & Technology Development

Presenter(s): Rob Rose, FIU

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

common issue to address.

Einar Ronningen 3

In the utility sector, the risks are defined since the materials are well known. Current industrial hygiene techniques of monitoring exposures to hazards other than radiological have proven to be sufficient. In our experience, the results are "all or nothing", either the workers are in supplied air (e.g., exposure to chrome-6 during plasma cutting of stainless and oxy cutting of stainless coated with lead-based paint) or there is no industrial hazard (e.g., oxy cutting of uncoated carbon steel).

James Rang 2

Richard Nevarez 4

The study has the potential to generate good information for the D&D community.

Robert C. Thomas 4

Roger H. Liddle 5

Airborne contaminants during cutting are a major problem at virtually every site.

Criterion 2: Benefits - Performance

Drew Spiker 3

Pending results.

Einar Ronningen 3

Unsure of the benefit to utility industry, since exposures are well defined.

James Rang 4

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Data is still being collected.

Roger H. Liddle 5

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen <i>No indication.</i>	Not Rated/NA
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James Rang <i>Not discussed.</i>	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker <i>Good data collection.</i>	5
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	5
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Criterion 5: Technical Progress - Cost

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez <i>Cost was not provided.</i>	1
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 6: Technical Progress - Schedule

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
James Rang <i>On schedules.</i>	3
Richard Nevarez <i>One item, the metal cutting by different tools was only 50% complete, with the end date being July 16.</i>	3
Robert C. Thomas	4
Roger H. Liddle	3
Criterion 7: Technical Progress - Communications	
Drew Spiker	Not Rated/NA
Einar Ronningen	Not Rated/NA
James Rang	3
Richard Nevarez	Not Rated/NA
Robert C. Thomas	5
Roger H. Liddle <i>Working with air monitor working group, and presenting to HP society.</i>	5
Criterion 8: Technical Progress - Stakeholder Involvement	
Drew Spiker	4
Einar Ronningen	Not Rated/NA
James Rang	3
Richard Nevarez <i>Integrating with the Air Monitors User Group, EM-50. Should also initiate communication of results with the end user.</i>	3
Robert C. Thomas	4

Roger H. Liddle	4
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Criterion 9: Technical Progress - End-user Commitment

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
-----------------	--------------

James Rang	3
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
-----------------	--------------

James Rang	3
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Reviewers Overall Project Comments

Einar Ronningen

Coatings for fixing "loose" contamination are an industry need overall. Coatings are available, but improved coatings (low cost, easy to apply, quick drying) that could result from this program would be beneficial.

Robert C. Thomas

Project has a moderate degree of relevance for commercial D&D activities. Cutting of stainless steels is problematic and better ventilation/filtration would be beneficial.

James Rang

To improve measuring techniques for inhalation exposure to aerosols. Baseline comparison established.

Richard Nevarez

Concept is good. It is not clear how the results of this study will relate to ALARA principles.

Drew Spiker

Very worthwhile look into personnel safety issues.

Roger H. Liddle

Valuable project. Does not readily lend itself to measurement by these scores. My assessment is that this project is important and that the approach reflects a reasonable use of actual metals, cutting techniques.

Project Title: D&D Waste Disposition & Treatment

Presenter(s): Rob Rose, FIU

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

No site selected for demo?

Einar Ronningen 4

While our industry recognizes the benefits of recycling materials, and it makes good common sense, the political ramifications can shut down an otherwise technically viable process. The goal of simply treating the waste stream successfully is sufficient to justify the program.

James Rang 4

Richard Nevarez 3

Robert C. Thomas 5

Roger H. Liddle 4

Tri-regulated wastes are common in DOE.

Criterion 2: Benefits - Performance

Drew Spiker 5

Assuming baseline is disposal.

Einar Ronningen 5

Development of a treatment system/process, if cost effective, will provide benefits to those older facilities with PCB-laced paints. For these coatings, this process can expand beyond the nuclear-type D&D sector. However, there are few other industries that perform the characterization necessary to identify the hazards, especially PCB in paint.

James Rang Not Rated/NA

Not there yet, deployment in development.

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Hard to understand the performance as it was not contrasted against baseline technologies/methods of handling.

Roger H. Liddle 5

Good lab stage benefits. Real world yet to be done.

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

No cost data supplied. Must cost less than the available disposal methods for that material that can be currently disposed.

James Rang Not Rated/NA

Not there yet.

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Unknown at this point.

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Potential high but not demonstrate.

Criterion 5: Technical Progress - Cost

Drew Spiker Not Rated/NA

No data.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez	1
<i>Not provided.</i>	
Robert C. Thomas	4

Roger H. Liddle	Not Rated/NA
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Criterion 6: Technical Progress - Schedule

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
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James Rang	3
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Richard Nevarez	3
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Robert C. Thomas	3
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Roger H. Liddle	Not Rated/NA
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Criterion 7: Technical Progress - Communications

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 9: Technical Progress - End-user Commitment

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	2
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Reviewers Overall Project Comments

Robert C. Thomas

This project has a fairly high degree of relevance to commercial D&D activities. For example, dependent of plant vintage, PCB's in paints have been a major issue with, case in point Yankee Rowe. Mixed wastes and hazardous wastes are problematic for commercial sites and tend to be difficult to handle and expensive to deal with.

James Rang

Project goals emphasized.

Richard Nevarez

The focus of this study could assist SNL environmental restoration project. They currently have a PCB waste which is contaminated with tritium and are still looking for a disposition path of this waste. Although a good initiative, seems like this initiative should be funded under the MW focus area.

Drew Spiker

Not clear how something gets this far with no host site identified. What about the sites that identified needs?

Roger H. Liddle

Overall project seems to be in the lab R&D phase. Has wide potential applicability at some point, but difficult to grade pending more real world testing.

Project Title: Long-Term Monitoring & Stewardship for DDFA

Presenter(s): Rob Rose, FIU

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

Einar Ronningen 3

James Rang Not Rated/NA

Richard Nevarez 3

Under a leave in place scenarios LTS would be an appropriate focus for this activity.

Robert C. Thomas 3

Roger H. Liddle 4

Criterion 2: Benefits - Performance

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez Not Rated/NA

Robert C. Thomas 3

Roger H. Liddle Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 5: Technical Progress - Cost

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	1
<i>Not provided.</i>	

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 6: Technical Progress - Schedule

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	3
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Robert C. Thomas	3
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Roger H. Liddle	3
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Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 9: Technical Progress - End-user Commitment

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Reviewers Overall Project Comments

Einar Ronningen

The outcome of this research should be tied with (for the commercial utility sector) the NRC's investigation into entombment for utility facilities. Success in this type of program may be what is needed for this to be a viable alternative to shallow land burial for LLW at decommissioning utility sites.

Robert C. Thomas

This project has moderate relevance for commercial D&D sites. This is largely a state by state/project specific requirement.

James Rang

Just getting started.

Richard Nevarez

Integration of these efforts should really be done with the LTS working group.

Roger H. Liddle

R&D project that does not lend itself most of these criteria. Overall evaluation is that the needs are there and they seem to be on track for the R&D effort.

Project Title: D&D Technology Assessment Program

Presenter(s): Rob Rose, FIU

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker Not Rated/NA

Einar Ronningen 2

James Rang 4

Good accomplishment within 83 technologies assessments completed since inception.

Richard Nevarez 3

Robert C. Thomas 4

Roger H. Liddle 5

Criterion 2: Benefits - Performance

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 4

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

N/A.

Roger H. Liddle 3

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 4

Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
N/A.	

Roger H. Liddle	3
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Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	4
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	3
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Criterion 5: Technical Progress - Cost

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	3
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Richard Nevarez	1
<i>Cost was not provided.</i>	

Robert C. Thomas	4
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Roger H. Liddle	Not Rated/NA
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Criterion 6: Technical Progress - Schedule

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	4
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle <i>On schedule as published.</i>	3
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Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	3
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	4
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Roger H. Liddle <i>Site visits and ongoing dialogue as well as newsletter.</i>	5
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang <i>Have stakeholder involvement.</i>	4
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	4
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Roger H. Liddle <i>Sites visited to determine needs Active dialogue ongoing.</i>	3
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Criterion 9: Technical Progress - End-user Commitment

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang <i>Not there yet.</i>	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	3
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Roger H. Liddle <i>Since sites were consulted I would assume that their use potential was evaluated.</i>	3
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Criterion 10: Technical Progress - Industry Involvement and Vendor

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle <i>Seem to be using equipment and technologies from industries.</i>	4
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Reviewers Overall Project Comments

Einar Ronningen

Especially for technologies tested at DOE facilities, there is a built-in assessment program. Unsure of the value-added that this program provides. Any testing program should have the assessment of the technology well defined as a part of the deployment. Unclear of the focus of this program, is this service provided by FIU to other organizations deploying technologies, or a built-in portion of the deployment of FIU-developed technologies. As far as rating this program, no comparison with baseline is provided. What are the things being done that were not done before as far as performing assessments go? Improvements in assessments will benefit the end-user of any technology, but improvements in evaluations are not discussed.

Robert C. Thomas

Project provides a good reference for end-users. Every effort should be made to incorporate specific field experiences to broaden the value. This will make sure that the information will be of the highest value to

end-users who will be matching their specific needs.

James Rang

12 assessments currently planned. Schedule looks doable.

Roger H. Liddle

This is a broad scope R&D project involving mostly technology assessments. Scope of projects seem reasonable.

Project Title: ARI Technologies Asbestos Destruction

Presenter(s): Clifford Carpenter, NETL

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 3

Einar Ronningen 4

James Rang 4

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle 4

Criterion 2: Benefits - Performance

Drew Spiker 3

Einar Ronningen 5

If it works it is superior to no treatment. If treating contaminated asbestos, what are the parameters for handling the resulting material?

James Rang Not Rated/NA

Not ready yet.

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle 5

Considering stage of deployment the performance seems to have great potential.

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker 3

Einar Ronningen 1

No analysis provided, this must be justified by cost-benefit. Some costs given, but not the cost of

this technology.

James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	5
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Considering stage of deployment the performance seems to have great potential.

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker	Not Rated/NA
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Einar Ronningen	5
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	5
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Considering stage of deployment the performance seems to have great potential.

Criterion 5: Technical Progress - Cost

Drew Spiker	3
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Einar Ronningen	1
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Not provided.

James Rang	3
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	4
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Criterion 6: Technical Progress - Schedule

Drew Spiker	4
Einar Ronningen	3
James Rang	3
Richard Nevarez	Not Rated/NA
Robert C. Thomas	Not Rated/NA
Roger H. Liddle	4

Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
Einar Ronningen	3
James Rang	Not Rated/NA
Richard Nevarez	Not Rated/NA
Robert C. Thomas	Not Rated/NA
Roger H. Liddle	3

Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
Einar Ronningen	3
James Rang	Not Rated/NA
Richard Nevarez	Not Rated/NA
Robert C. Thomas	Not Rated/NA

Reviewers Overall Project Comments

Einar Ronningen

Interesting project, disposal of radioactively contaminated asbestos is expensive and this can help reduce that cost, however, disposal of non-contaminated asbestos is relatively low cost.

Robert C. Thomas

Was not present for the presentation, no comments.

James Rang

Project Objective to destroy ACM and convert ACM fibers to non-asbestos material. Shakedown testing to begin. Thermochemical conversion process destroys the asbestos. 10-20 tons per day hearth.

Drew Spiker

This must be a risk reduction effort? It is clear that disposal would be less cost. Presentation did not address disposal as an option. Why is this being pursued?

Project Title: Deployment of Innovative Characterization Technologies and Implementation of the MARSSIM Process at Radiologically Contaminated Sites ASTD

Presenter(s): Paul Kalb, BNL

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 5

Assuming you have the luxury of leaving structures behind (even if not contaminated).

Einar Ronningen 5

A benefit for anyone preparing MARSSIM surveys would be sharing of the QAPP.

James Rang 5

Close association with comparison data.

Richard Nevarez 4

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 2: Benefits - Performance

Drew Spiker 5

Einar Ronningen 4

Why, if the MARSSIM approach is assumed to be used, were the # of samples different with ISOCS vs. baseline?

James Rang 5

Richard Nevarez 5

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker 4

Einar Ronningen 4

Much more attractive since there is continued use of the technology at other facilities. Would be a different cost model for a utility, especially a single unit site.

James Rang	5
<i>Substantial cost reductions.</i>	

Richard Nevarez	5
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker	Not Rated/NA
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Einar Ronningen	4
<i>Reduces number of entries.</i>	

James Rang	5
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Richard Nevarez	3
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 5: Technical Progress - Cost

Drew Spiker	4
<i>Potential significant cost savings.</i>	

Einar Ronningen	4
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James Rang	4
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Richard Nevarez	4
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 6: Technical Progress - Schedule

Drew Spiker	4
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Einar Ronningen	3
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James Rang	4
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Richard Nevarez	4
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 7: Technical Progress - Communications

Drew Spiker	5
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Excellent use of graphics for regulator and public involvement (made it easier to review as well).

Einar Ronningen	3
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James Rang	3
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Richard Nevarez	4
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
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James Rang	4
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Richard Nevarez	4
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Reviewers Overall Project Comments

Einar Ronningen

MARSSIM implementation techniques are of interest to all facets, however, characterization needs differ greatly when comparing the needs of the DOE vs. the needs of the utilities. Most utility facilities have fewer unknowns compared to many DOE sites. Also, the utilities use waste stream analysis and scaling factors for hard-to-measure nuclides, since our waste streams are well characterized and known. Cooling duct characterization project interesting, but little potential for cross-over.

Robert C. Thomas

Not present for presentation.

James Rang

Deployment of MARSSIM Measurement Technology.

Drew Spiker

Best presentation to this point.

Project Title: DSize Reduction of the JN-3 Reactor Bioshield using Diamond Wire Saw ASTD
Presenter(s): Cidney Voth, Battelle Memorial Institute

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

Everyone has concrete to deal with.

Einar Ronningen 2

James Rang 4

Technology is now the baseline.

Richard Nevarez 5

Application of the diamond wire saw was effective.

Robert C. Thomas 3

Roger H. Liddle Not Rated/NA

Criterion 2: Benefits - Performance

Drew Spiker 4

Water was an issue, however there are dust suppression systems that utilize less water (misting systems).

Einar Ronningen 3

The benefits of this technology are why it has been used in the utility industry.

James Rang 5

Removed 95% Radwaste inventory.

Richard Nevarez 4

The cleaning of the wires between the diamond nodes needs to be cleaned. This is added cost to the project.

Robert C. Thomas 4

Diamond Wire Saw technology is clearly a superior technology for some applications. The use of water as a cooling medium can be problematic.

Roger H. Liddle Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker 4

Einar Ronningen 3

James Rang 4

Richard Nevarez 4

Cost performance information was provided, appears to save costs.

Robert C. Thomas 4

Roger H. Liddle Not Rated/NA

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker 4

ALARA

Einar Ronningen 4

Benefit of minimization of secondary wastes and water recycling, would help to know levels dealt with. Water recycling system is innovative.

James Rang 4

Richard Nevarez 4

Robert C. Thomas 4

The cross contamination issue is of some concern.

Roger H. Liddle Not Rated/NA

Criterion 5: Technical Progress - Cost

Drew Spiker 4

Einar Ronningen 3

James Rang 4

Richard Nevarez 1

Cost information not provided. What was planned for, what was costed to date???

Robert C. Thomas 4

Roger H. Liddle Not Rated/NA

Criterion 6: Technical Progress - Schedule

Drew Spiker	4
Einar Ronningen	3
James Rang	4
Richard Nevarez	1
<i>Schedule did not indicate milestones.</i>	
Robert C. Thomas	4
Roger H. Liddle	Not Rated/NA
Criterion 7: Technical Progress - Communications	
Drew Spiker	Not Rated/NA
Einar Ronningen	3
James Rang	3
Richard Nevarez	Not Rated/NA
Robert C. Thomas	Not Rated/NA
Roger H. Liddle	Not Rated/NA
Criterion 8: Technical Progress - Stakeholder Involvement	
Drew Spiker	Not Rated/NA
Einar Ronningen	Not Rated/NA
James Rang	3
Richard Nevarez	Not Rated/NA
Robert C. Thomas	Not Rated/NA
Roger H. Liddle	Not Rated/NA

Reviewers Overall Project Comments

Einar Ronningen

Well documented use of diamond wire in utility industry.

Robert C. Thomas

Diamond Wire technology has been used at several commercial D&D sites, notably Maine Yankee. It has broad application for thick concrete structures. Is the technology reported here any different from the technology currently in use by the utility sector? Also, utilities have fear of cross contamination/spread of contamination from engineered processes. Has any thought been given to use of the N2 cooled diamond wire saw technology?

James Rang

Deployment of diamond wire saw and size reduction of bioshield.

Richard Nevarez

Pictures are nice, but it is difficult to follow items such as technical approach, criterion, technical progress, etc., in non narrative text. Dust is still something that needs to be planned for in using the diamond wire saw. Although the blocks cost more per cubic foot (I.e. about 32 dollars/cu.ft., the rubble costs 17 dollars /cu.ft.) because they generate less volume via the blocks there is a cost savings. Is this project finished?

Project Title: Reducing, Reusing, and Recycling Concrete and Segmenting Plate Steel and Tanks Utilizing a Universal Demolition Processor

Presenter(s): Tim Miller, FDF

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker Not Rated/NA

Einar Ronningen 3

James Rang 5

Richard Nevarez 5

The technical approach appeared well planned out. Goals established, constraints were identified for selection of equipment.

Areas selected for application of technology.

Robert C. Thomas 4

Roger H. Liddle Not Rated/NA

Criterion 2: Benefits - Performance

Drew Spiker Not Rated/NA

Einar Ronningen 4

James Rang 5

Richard Nevarez 3

Actual work has not begun.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen 4

James Rang 5

Richard Nevarez 3

Actual work has not begun.

Robert C. Thomas 5

Recycling is certainly a better option than direct burial. Use in D&D of commercial facilities gets into a highly charged political issue. Maine Yankee has apparently failed in their attempt to leave rubblized concrete on site.

Roger H. Liddle Not Rated/NA

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker Not Rated/NA

Einar Ronningen 4

James Rang 4

Richard Nevarez 3

Actual work has not begun.

Robert C. Thomas 3

Roger H. Liddle Not Rated/NA

Criterion 5: Technical Progress - Cost

Drew Spiker Not Rated/NA

Einar Ronningen 3

James Rang 4

Richard Nevarez 3

Under running planned cost.

Robert C. Thomas 4

Roger H. Liddle Not Rated/NA

Criterion 6: Technical Progress - Schedule

Drew Spiker	Not Rated/NA
Einar Ronningen	3
James Rang	4
Richard Nevarez <i>Appears to be on schedule.</i>	4
Robert C. Thomas	3
Roger H. Liddle	Not Rated/NA

Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
Einar Ronningen	3
James Rang	4
Richard Nevarez	Not Rated/NA
Robert C. Thomas	Not Rated/NA
Roger H. Liddle	Not Rated/NA

Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
Einar Ronningen	Not Rated/NA
James Rang	4
Richard Nevarez <i>Fact sheets being prepared, briefings performed.</i>	3
Robert C. Thomas	Not Rated/NA

Reviewers Overall Project Comments

Einar Ronningen

Recycling of concrete materials resulting from commercial utility D&D is often not an option, since usually "clean" concrete may not be subject to demolition for 10 CFR 50 license termination. Also, the types of structures vary between DOE facilities and utility facilities. Some mention of tank demolition, but not presented. This may be useful for utilities.

Robert C. Thomas

The Japanese have done quite a bit of work with recycling contaminated (Low-level) concrete. It might be of some value to review some of their work. Contact me for a POC and a presentation that was given last year at an NEI/EPRI Decommissioning Technology Forum in Newport Beach, CA.

James Rang

Universal demolition of concrete technology thru "cracker", pulverizer and shear jaw, Schedule acceleration of 3 years and \$11Million savings, recycling reduces by 1/2.

Richard Nevarez

As a positive note, this presentation provided all of the requested information. It was done very well.

Drew Spiker

Went to listen to the Conn. Yankee presentation. Did not review.

Project Title: Improved Measurement and Monitoring Systems (IMMS)

Presenter(s): Paul Pettit, FDF

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 3

Richard Nevarez 3

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 2: Benefits - Performance

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 4

Richard Nevarez 3

Still in process of collecting data.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 4

Richard Nevarez 3
Still in process of collecting data.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 3

Richard Nevarez 3
Still in process of collecting data.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 5: Technical Progress - Cost

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 2
Marginally cost effective.

Richard Nevarez 3
Cost to date is under planned cost.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 6: Technical Progress - Schedule

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 2

Behind 2 months.

Richard Nevarez

2

The Survey Remote Prismless Total Station appears to be behind schedule. The Paddys Run was to have been completed by Spring 2001.

The Real Time Physiological Monitoring System is "a couple of months behind schedule".

Integrated Wireless Radon Monitoring System behind schedule.

Robert C. Thomas

Not Rated/NA

Roger H. Liddle

Not Rated/NA

Criterion 7: Technical Progress - Communications

Drew Spiker

Not Rated/NA

Einar Ronningen

Not Rated/NA

James Rang

3

Richard Nevarez

Not Rated/NA

Robert C. Thomas

Not Rated/NA

Roger H. Liddle

Not Rated/NA

Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker

Not Rated/NA

Einar Ronningen

Not Rated/NA

James Rang

3

Richard Nevarez

3

Stakeholder discussions for air monitoring has been done with FCAB.

Robert C. Thomas

Not Rated/NA

Roger H. Liddle

Not Rated/NA

Reviewers Overall Project Comments

Einar Ronningen

Surveying not typically a part of utility D&D. The working conditions during utility D&D does not normally require personnel physiological monitoring. Radon is only a naturally occurring nuisance for the utility industry.

Robert C. Thomas

Not present for presentation.

James Rang

Remote prismless survey instrument, projected savings in 1 person/year - \$50,000. To install and deploy Spring 2001. Marginally cost effective.

Richard Nevarez

The need to deploy a new survey instrument is probably not a real high priority for D&D, in comparison to others. Remote radio communications for air monitoring is an excellent idea.

Drew Spiker

At Connecticut Yankee presentation.

Project Title: Intrusive and Non-Intrusive Characterization through Concrete Walls ASTD
Presenter(s): Donald Krause, BWXT

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang 3

Richard Nevarez 2

The technical approach identifies some key activities, but does not identify goals/objectives for FY01/02.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 2: Benefits - Performance

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Too early.

Richard Nevarez 3

Most data obtained from top side. Interference from rebar while performing the geophysical measurements. Images not definitive. No baseline data provided.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen Not Rated/NA

James Rang	Not Rated/NA
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Richard Nevarez	3
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No baseline data provided.

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	3
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No baseline data provided.

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 5: Technical Progress - Cost

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	1
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\$620K remains for expenditure in FY01/02.

No cost plan provided.

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 6: Technical Progress - Schedule

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	2
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Richard Nevarez	1
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No schedule activities were identified for FY01.

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	3
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Richard Nevarez	3
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	3
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Richard Nevarez	3
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Reviewers Overall Project Comments

Einar Ronningen

The circumstances are very different from that encountered in commercial utility D&D.

Robert C. Thomas

Did not attend the presentation.

James Rang

To identify potential physical and radiological hazards from Cave D&D and systematically improve worker safety. Funding \$820,000 for FY00 to 02.

Richard Nevarez

It is expected that the scope will be expanded. Recommendation is that the project establish milestones, scope definition for the remaining funds.

Drew Spiker

At Connecticut Yankee presentation.

Project Title: Highly Selective Nuclide Removal System ASTD

Presenter(s): John Pickett, WSRC

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

Satisfy needs at several facilities.

Einar Ronningen 4

Similar to concerns with primary (spent fuel pool) water at utility sites.

James Rang 4

Getting good results as targeted.

Richard Nevarez 3

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 2: Benefits - Performance

Drew Spiker 5

Einar Ronningen 4

Potential as an alternative to conventional solidification techniques.

James Rang 5

Richard Nevarez 5

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker 5

based on numbers provided.

Einar Ronningen 5

The additional benefit of schedule acceleration is almost as valuable as the cost savings.

James Rang 5

Not yet but looking good.

Richard Nevarez 5

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker 4

Einar Ronningen 4

Utility concern: how do the chemicals used affect disposal at a commercial facility?

James Rang 5

Richard Nevarez 5

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 5: Technical Progress - Cost

Drew Spiker Not Rated/NA

No original budget numbers provided.

Einar Ronningen 4

James Rang 4

Richard Nevarez 3

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 6: Technical Progress - Schedule

Drew Spiker 4

On schedule yet sr-90 not done - no original schedule provided.

Einar Ronningen 3

James Rang 4

Richard Nevarez	2
<i>Behind schedule.</i>	

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
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Einar Ronningen	3
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James Rang	3
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Richard Nevarez	3
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	3
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Richard Nevarez	3
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Reviewers Overall Project Comments

Einar Ronningen

Looks like a good success for DOE DDFA, issue of secondary waste could be a show-stopper for utility, but at the stated cost per gallon, looks attractive.

Robert C. Thomas

Did not attend the presentation.

James Rang

Remove Sr -90 and Cs-137, Status - removed 98-99% for Cs and just starting Sr removal with ion-exchange.

Drew Spiker

Appears to be a successful project, especially in the area of cs-137.

Project Title: Rocky Flats D&D Initiative – Central Size Reduction Facility and ASTD Projects
Presenter(s): Charles Brown, Kaiser Hill

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

Numerous technologies discussed.

Einar Ronningen Not Rated/NA

James Rang 4

Achieved substantial progress to date.

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 2: Benefits - Performance

Drew Spiker 4

Continued improvement being made on in-use methods and techniques.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Baselines not established.

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

No data.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker <i>worker safety was addressed.</i>	3
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 5: Technical Progress - Cost

Drew Spiker <i>No cost data provided.</i>	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	2
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 6: Technical Progress - Schedule

Drew Spiker <i>Indicating overall project completion in 2006 may not be made. Individual schedules for technologies deployed not provided.</i>	3
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Einar Ronningen	Not Rated/NA
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James Rang	2
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 7: Technical Progress - Communications

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	2
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	Not Rated/NA
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Reviewers Overall Project Comments

Einar Ronningen

Generally very different from utility needs. Size reduction, decon, cutting technique and worker safety improvements always are common areas between the two sectors. Metal-oxygen exothermic cutting is of interest as an alternative to plasma, however, the personnel hazards associated with cutting stainless will probably be similar. Draft decon. Criteria doc: what about MARSSIM DCGLs for determining residual radioactivity criteria?

Robert C. Thomas

Did not attend the presentation.

James Rang

Multiple project initiatives included, Closure optimistic in 2006.

Richard Nevarez

Scheduling conflict with Lessons Learned Presentation.

Drew Spiker

Appear to have a good feel for areas requiring attention, but do not seem optimistic about 2006.

Project Title: TRU Waste Laser Cutting System ASTD

Presenter(s): Edward Hohman, Bechtel-NV

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 4

Several needs identified. This is one option that may satisfy these needs.

Einar Ronningen 3

Benefits of better cutting technologies, specifically reduced fume production. Remote, robotic operation probably not going to cross over to utility use. The support systems required to use may limit scope of usefulness.

James Rang Not Rated/NA

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 2: Benefits - Performance

Drew Spiker 3

Has it application.

Einar Ronningen 3

James Rang Not Rated/NA

Not available yet.

Richard Nevarez Not Rated/NA

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker Not Rated/NA

Einar Ronningen 1

Probably not cost effective for utility use.

James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker	Not Rated/NA
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Einar Ronningen	4
<i>Potential of reduced exposure to fumes.</i>	

James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 5: Technical Progress - Cost

Drew Spiker	Not Rated/NA
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Einar Ronningen	3
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 6: Technical Progress - Schedule

Drew Spiker	4
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Einar Ronningen	3
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James Rang	3
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 7: Technical Progress - Communications

Drew Spiker	4
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Einar Ronningen	3
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James Rang	3
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	4
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Open house.

Einar Ronningen	Not Rated/NA
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James Rang	2
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Reviewers Overall Project Comments

Robert C. Thomas

Did not attend the presentation.

James Rang

Deployment of innovative laser cutting system. Make the system transportable for deployment at multiple sites. Project schedule for completion in late FY 2002.

Richard Nevarez

Scheduling conflict with Lessons Learned Presentation.

Drew Spiker

Moving right along.

Project Title: Robotic Platform for B-Cell Cleanout

Presenter(s): Greg Berlin, Fluor Hanford

Reviewers Rating and Comments

Criterion 1: Relevancy and Technical Approach

Drew Spiker 3
Satisfy many Hanford needs but seems to have limited application elsewhere (at least directly).

Einar Ronningen Not Rated/NA

James Rang 3
Too early to tell. Probably OK.

Richard Nevarez 3

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 2: Benefits - Performance

Drew Spiker 3
Doesn't matter. Areas inaccessible and site/building has special needs.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3
Results pending deployment.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 3: Benefits - Cost Effectiveness

Drew Spiker 3
Ditto.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3
Results pending deployment.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 4: Benefits - Environmental and Worker Health and Safety

Drew Spiker 3
Ditto.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 3
Results pending deployment.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 5: Technical Progress - Cost

Drew Spiker 4
On budget.

Einar Ronningen Not Rated/NA

James Rang Not Rated/NA

Richard Nevarez 1
It is likely that the cost will exceed the planned funded cost. Cost commitments to date are 1.540K out of the 1.545K.

Robert C. Thomas Not Rated/NA

Roger H. Liddle Not Rated/NA

Criterion 6: Technical Progress - Schedule

Drew Spiker 3
Slightly behind.

Einar Ronningen Not Rated/NA

James Rang	Not Rated/NA
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Richard Nevarez	2
<i>Behind schedule.</i>	

Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 7: Technical Progress - Communications

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Criterion 8: Technical Progress - Stakeholder Involvement

Drew Spiker	4
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Einar Ronningen	Not Rated/NA
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James Rang	Not Rated/NA
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Richard Nevarez	Not Rated/NA
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Robert C. Thomas	Not Rated/NA
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Roger H. Liddle	Not Rated/NA
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Reviewers Overall Project Comments

Einar Ronningen

Technology specific to DOE, probably not transferable to utility D&D.

Robert C. Thomas

Did not attend the presentation.

James Rang

To enable remote operating tools to access all areas in 324 bldg hot cells. A robotic work platform. Tools just received. To begin deployment in Aug after training done.

Drew Spiker

Tough job

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Appendix E

Deactivation and Decommissioning Focus Area FY2001 Mid-Year Review Agenda

April 17, 2001

Project/Presentation	Presenter
Introductions	Dr. Ali Ebadian, Director, FIU-HCET
Welcome	Dr. Mark Rosenberg, Provost, FIU
Opening Remarks	Mr. Brent Armstrong, Associate Director, Office of Environmental Management and Defense Programs, NETL
Introduction and Overview of DDFA	Mr. Robert Bedick, Product Manager, NETL
TRU Waste Characterization, Decontamination and Disposition LSDDP at LANL*	Mr. John McFee, IT Corp.
Mound Tritium D&D LSDDP*	Mr. Don Krause, BWXT
Luncheon: Speaker: Mr. James Fiore, Deputy Assistant Secretary, Office of Site Closure, Office of Environmental Management, U.S. Dept. of Energy	
INEEL Fuel Storage Canals and Associated Facilities D&D LSDDP	Mr. Richard Mesurvey, INEEL
DDFA New LSDDPs	Mr. Steve Bossart, NETL
Beryllium Surface and Air Monitors*	Mr. Steven J. Saggese, SEA
Characterization Engineering Initiative*	Dr. Dave Roelant, FIU-HCET
Modular Manipulator for Robotic Applications*	Mr. Derek Black, ARM Automation, Inc.
Human Machine Cooperative Telerobotics (Robot Task Space Analyzer)*	Dr. William Hamel, University of Tennessee
Telerobotic Control*	Dr. Dennis Haley, ORNL
Telerobotic Manipulation System*	Dr. Dennis Haley, ORNL
High Productivity Vacuum Blasting System*	Mr. William McPhee, LTC Teletrak, Inc.
AEA Technologies (Multiple Tasks)*	Mr. Mark Morgan, AEA

* indicates a project reviewed at the mid-year review.

**Deactivation and Decommissioning Focus Area
FY2001 Mid-Year Review
Agenda (Continued)**

April 18, 2001

Project/Presentation	Presenter
Hemispheric Center for Environmental Technologies at Florida International University	Mr. Rob Rose, FIU-HCET
- Technology Development, Integration and Deployment Program*	Mr. Leonel Lagos, FIU-HCET
- Worker Health & Safety Research & Technology Development*	Mr. Rob Rose, FIU-HCET
- D&D Waste Disposition & Treatment*	Mr. Nicholas Hefty, FIU-HCET
- Long-Term Monitoring & Stewardship for DDFA*	Ms. Ilka Medrano, FIU-HCET
- D&D Technology Assessment Program*	Mr. Marshall Allen, FIU-HCET
DOE/Commercial Utilities MOU Progress Update	Mr. Nelson Rekos, NETL
Technology Transfer to D&D from Other Industries	Ms. Thea Reilkoff, EERC at University of North Dakota
Environmental Management Science Program Highlights	Mr. Larry Whitmill, INEEL
Mound Long Term Stewardship Project	Mr. Steve Bossart, NETL
ASTD Introduction, Success Stories, New Projects	Mr. Steve Bossart, NETL
ARI Technologies Asbestos Destruction *	Mr. Cliff Carpenter, NETL
Luncheon: Speaker: Mr. Gerald Boyd, Deputy Assistant Secretary, Office of Science and Technology, Office of Environmental Management, U.S. Dept. of Energy	
Deployment of Innovative Characterization Technologies and Implementation of MARSSIM at Radiologically Contaminated Sites ASTD*	Mr. Paul Kalb, BNL
Size Reduction of the JN-3 Reactor Bioshield using Diamond Wire Saw ASTD*	Mr. Sidney Voth, Battelle Memorial Institute
Reducing, Reusing, and Recycling Concrete and Segmenting Plate Steel and Tanks Utilizing a Universal Demolition Processor ASTD*	Mr. Tim Miller, FDF
Improved Measurement and Monitoring System (IMMS) ASTD*	Mr. Paul Pettit, FDF
Intrusive and Non-Intrusive Characterization through Concrete Walls and Floors ASTD*	Mr. Don Krause, BWXT
Highly Selective Nuclide Removal System ASTD*	Mr. John Pickett, WSRC
Rocky Flats D&D Initiative- Central Size Reduction Facility and ASTD Projects*	Mr. Charles Brown, Kaiser-Hill
TRU Waste Laser Cutting System ASTD*	Mr. Edward Hohman, Bechtel-NV
Robotic Platform for B-Cell Cleanout ASTD*	Mr. Kim Koegler, Fluor Hanford

* indicates a project reviewed at the mid-year review.